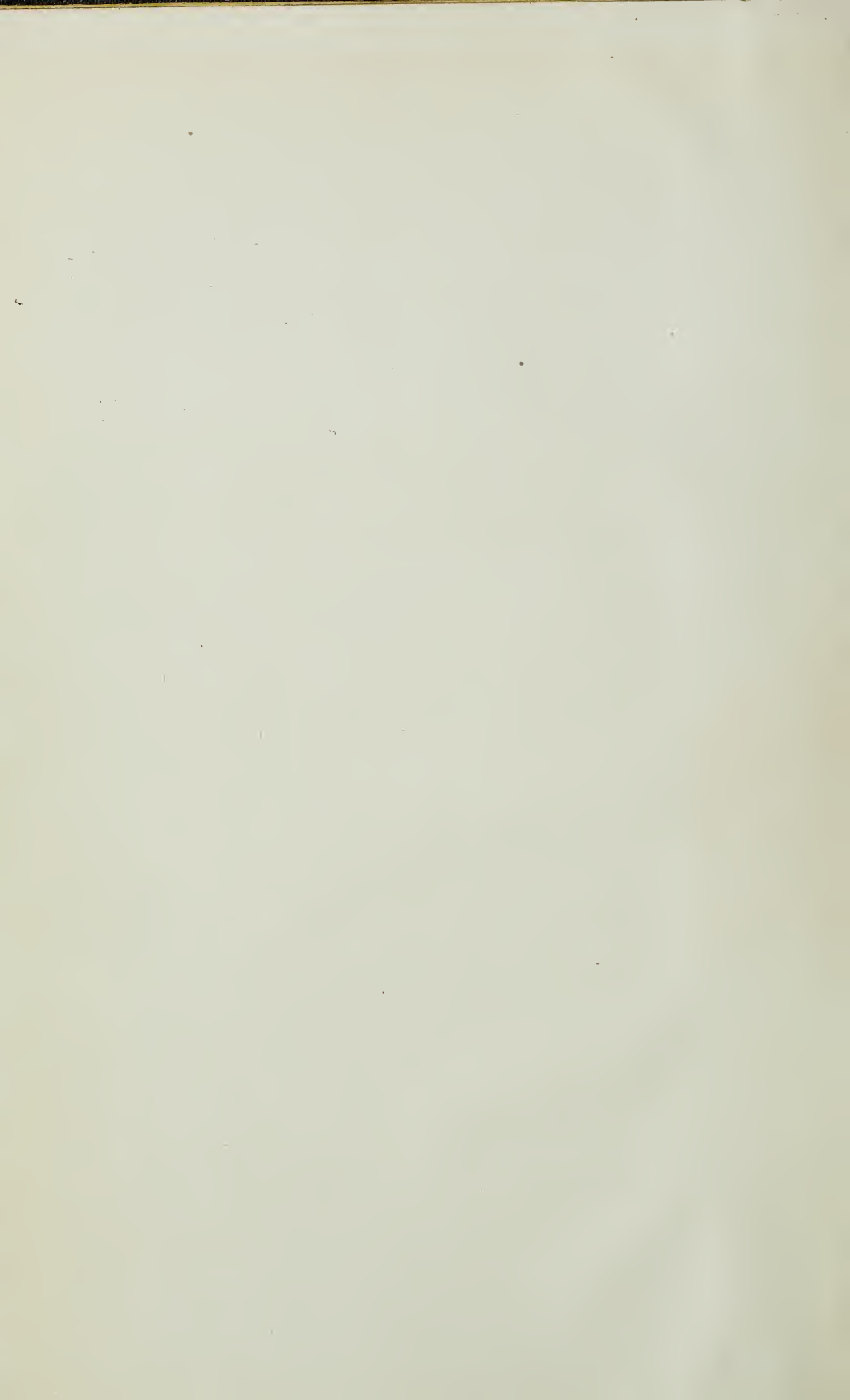


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# Gleanings in Bee Culture



X



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# CONTENTS

## JANUARY, 1921

|   |                             |
|---|-----------------------------|
| Honey Markets .....                       | 4-5                         |
| Editorials .....                          | 9-11                        |
| Real Apiary Management.....               | Morley Pettit 12-14         |
| Beekeeping in the South.....              | E. R. Root 14-16            |
| Comb-honey Production.....                | Geo. S. Demuth 16-17        |
| The Value of Package Bees.....            | H. F. Wilson 18-19          |
| Beekeeping in Foreign Lands.....          | E. L. Sechrist 20-22        |
| Honey in the Sweet Family.....            | E. Wynne Boyden 22-24       |
| Making of Honey a Staple.....             | H. B. Parks 25              |
| Undue Swarming in England.....            | A. H. Bowen 25-26           |
| An Artistic Natural Shade.....            | J. W. Admire 27             |
| The Bedell Capping Press.....             | R. F. Holtermann 28         |
| Siftings.....                             | J. E. Crane 29              |
| Our Food Page.....                        | Constance Root Boyden 30-31 |
| Beekeeping as a Sideline.....             | Grace Allen 32-33           |
| From North, East, West, and South .....   | 34-36                       |
| Heads of Grain from Different Fields..... | 37-40                       |
| The New Year.....                         | Bill Mellvir 40             |
| Bees, Men, and Things.....                | 41                          |
| Gleaned by Asking.....                    | Geo. S. Demuth 42-43        |
| Just News .....                           | 44                          |
| Our Homes.....                            | A. I. Root 45-47            |

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H. G. Rowe  
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You'll Need an "Ideal Bee Veil"--True to its name.  
\$1.95 postpaid in U. S. A.

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Send us a sample of your extracted honey. We also buy comb honey. Tell us how much you have and what you want for it. We pay the day shipment is received.

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We pay you the highest market price for rendered wax, less 5 cts. per pound for rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

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## LEWIS BEE SUPPLIES

Practical Beekeepers stock supplies now. This saves expense and insures against delay in the rush season.

A plentiful supply of 18-oz glass Honey Containers now on hand. Wax and comb taken for cash or trade.

Write Department C.

**Western Honey Producers, Sioux City, Iowa.**

## The enormous demand for "SUPERIOR" FOUNDATION

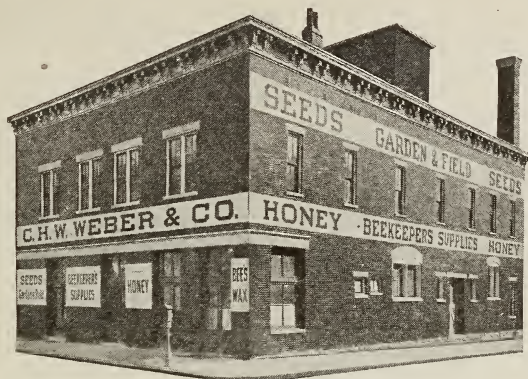
signifies highest quality.

Our 1920 output over 150,000 pounds.

Beeswax wanted; For cash, or in exchange for foundation or bee supplies. Prices on request.

**Superior Honey Company -- Ogden, Utah**  
(MANUFACTURERS OF WEED PROCESS FOUNDATION)





Wishing all a Merry Christmas  
and a Happy New Year.

C. H. W. WEBER & COMPANY  
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## THE OLD RELIABLE THREE-BANDED ITALIANS



Booking orders now for 1921. Queens ready April 1st. My Italians are of an exceptionally vigorous and long-lived stock strain of bees. They are gentle, prolific, very resistant to foul brood, and the best of honey-gatherers. I have sold a good many queens to parties who are using them in stamping out foul brood. Orders booked for one-fourth cash, balance before delivery. Will guarantee safe arrival in the United States and Canada. Descriptive circular and price list free.

|                       | Prices April, May, and June |        |         | July to November |        |         |
|-----------------------|-----------------------------|--------|---------|------------------|--------|---------|
|                       | 1                           | 6      | 12      | 1                | 6      | 12      |
| Untested .....        | \$1.50                      | \$8.00 | \$15.00 | \$1.25           | \$6.50 | \$12.50 |
| Select Untested ..... | 1.75                        | 9.00   | 16.00   | 1.50             | 8.00   | 15.00   |
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No nuclei or pound pack. John G. Miller, 723 C St., Corpus Christi, Tex.  
ages of bees for sale.

## Thagard's Italian Queens

Bred for quality. My Three-Band Queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting, and honey producers. They have made a great record for every one that has tried them. Book your order now for spring delivery.

|                       | 1      | 6      | 12      |
|-----------------------|--------|--------|---------|
| Untested .....        | \$2.00 | \$8.00 | \$15.00 |
| Select Untested ..... | 2.25   | 10.00  | 18.00   |
| Tested .....          | 3.00   | 16.00  | 28.00   |
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We guarantee pure mating, safe arrival, and satisfaction. Circular free.

V. R. THAGARD, Greenville, Ala.

## HONEY MARKETS

The Government market quotations and the opinions of honey-producers printed below tell of a weaker market and a light demand for honey. All honey-producers will be interested in the reports as to results achieved in some places by seeking a local market. The report from Wisconsin is notable in this regard. There is ground for hope that the market may strengthen after the holidays, for the honey stocks in the hands of jobbers, bottlers, wholesalers and retailers everywhere are light.

### U. S. Government Market Reports.

SHIPPING POINT INFORMATION, DEC. 14.

LOS ANGELES, CALIF.—Practically no wire inquiry. Movement poor, market weak, prices lower. Carloads f. o. b. usual terms, per lb., 5-gallon cans white orange and sage 16c, light amber sage 13-15c, light amber alfalfa 10½-15½c, white sweet clover 13c; Hawaiian light amber 9½c. Beeswax: Sacked in 1 c. l. lots 40c. Better inquiry is expected after the holidays, altho lower prices are considered possible due to weak sugar market and industrial depression. There is no export demand on account of foreign exchange and present prices of California honey.

INTERMOUNTAIN REGION (COLORADO AND IDAHO).—Light movement of extracted, but more liberal shipments of comb are being made. Carloads f. o. b. usual terms, 24-section cases comb, fancy, \$7.00; No. 1, \$6.75; No. 2, \$6.50 per case. TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

BOSTON.—No arrivals since Dec. 1. Very few sales of comb honey reported and practically none of extracted. Market for comb honey is firm on account of light supplies but unsettled for extracted. Nominal quotations on extracted honey are lower. Comb: Sales to retailers, New York, 24-section cases white clover No. 1, \$8.25-9.00; some extra fancy stock selling as high as \$12.00 per case; Vermonts, 20-section cases white clover No. 1, \$7.50-8.00 per case. Extracted: Nominal quotations to bottlers and confectioners, California, old crop, white sage 18-19c, alfalfa 14-15c per lb.; Porto Rican, fair quality amber 75-85c per gallon. Beeswax: No trading, and under depressed condition of market difficult to give even a nominal quotation.

CHICAGO.—No carlot arrivals, but a number small lots from Colorado, California, Wisconsin, and Ohio arrived, totaling 8,000 or 10,000 pounds since Dec. 1. Demand is light and trading very slow. Bottlers are buying even lighter than wholesale grocers, mail-order houses, etc. Comb: Stock is holding generally steady and is scarce. Present offerings from Idaho and Colorado are selling to retailers at \$7.00-7.75 per 24-section case. Extracted: Market is weak and gradually declining. Alfalfa and clover from Colorado, Minnesota, and Ohio selling to bottlers, wholesale grocers, etc., mostly 15c, light amber 14c per lb. Beeswax: L. c. l. receipts of foreign and domestic wax, mostly Ohio and Wisconsin have been heavy and market tone is easy. Dark stock, both domestic and imported, is bringing around 32c, light 35c. Most stock sold to harness manufacturers and drug houses.

CINCINNATI.—No arrivals since Dec. 1. Extracted and comb: Supplies liberal. Practically no demand nor movement, market very dull, too few sales to establish market. Beeswax: Supplies liberal, demand and movement moderate, market steady. Sales to large users, wide range of prices, average yellow 38-45c per lb.

DENVER.—Supplies liberal, market barely steady, demand and movement light. Sales to jobbers, extracted: Colorado, white 15-20c, light amber 14½-18c, amber 14-17c. Comb: Colorado, 24-section cases, No. 1 white, \$7.20; No. 2, \$6.75. Beeswax: Cash to beekeepers, 36c per lb.

KANSAS CITY.—No carlot arrivals since last report. Supplies moderate, demand and movement moderate, market dull. Dealers looking for further

decline owing to large supplies still in producers' hands, practically all factors buying only as needed. Extracted: Sales in small lots to jobbers or large users, Californias and Colorados, light amber alfalfa 17-18c. Comb: Sales to jobbers, California, Colorado, and Nevada, light alfalfa 24-section flat cases No. 1, \$6.50-7.00. Beeswax: Practically no sales.

MINNEAPOLIS.—Supplies moderate. Market weaker on extracted, but comb is holding steady to retailers. Understand comb can be bought from brokers at slightly less than present stock cost, but dealers are holding off as long as possible. Movement is very slow, most sales being made to retail grocers. Extracted: 60-lb. cans western alfalfa and sweet clover mixed, white 19c, light amber 18c; Minnesota, Wisconsin, and Iowa white clover 20-22c. Comb: No. 1, 24-section cases, western, alfalfa and sweet clover mixed, \$8.00; Minnesota, white clover, \$7.75-8.00.

NEW YORK.—Supplies very light, practically no demand nor movement. Market weak; confectioners, bakers, and manufacturers not buying on account of plentiful supply of sugar and syrup at low prices, supplies being bought only on hand-to-mouth basis. Dealers believe better prospects in sight after holidays. No carlot arrivals since Dec. 1. Extracted: Sales to jobbers, large wholesalers, confectioners, and bakers, Californias, light amber alfalfa 10-12c; white alfalfa 12-14c, light amber sage 14-16c, white orange blossom and white sage 15-17c. West Indian and South American, refined, 60-70c per gallon. Comb: Supplies practically exhausted, too few sales to establish market. Beeswax: Practically no demand nor movement. Market dull, buying being done only in very small quantities for current demand. Sales to jobbers and wholesalers, South Americans and West Indian, light, 20-22c, dark 18-20c per lb.

PHILADELPHIA.—No arrivals except few small lots of near-by stock. No demand nor movement. No sales reported.

ST. LOUIS.—No arrivals reported since Dec. 1. Comb: Supplies are liberal. Very little movement reported with no better prospects before the first of the year. Sales in small quantities, direct to retailers, per 24-section cases, Colorado, white clover and alfalfa, \$7.00-8.00, mostly around \$7.00. Extracted: Supplies liberal. No sales on honey in barrels reported, and stock in cans reported moving slowly. Sales to wholesale grocers, large buyers and jobbers, in 5-gallon cans per lb. California, light amber alfalfa 15-16c; Mississippi and Arkansas light amber mixed various flavors 15c; Colorado, white clover and alfalfa 17-18c. Beeswax: Supplies light. Demand very light and practically no movement. Market is weaker. Nominal quotation to jobbers and manufacturers of floor wax and comb foundation, prime yellow 28c per lb.

GEORGE LIVINGSTON,  
Chief of Bureau of Markets.

### Special Foreign Quotations.

LIVERPOOL.—The value of extracted honey at today's rate of exchange is 12 to 13 cents per pound. The value of beeswax in American currency is from 27 to 29 cents per pound.

Liverpool, England, Dec. 7. Taylor & Co.  
CUBA.—Honey is quoted today at 75 cents per gallon; wax brings \$20 per quintal of 100 pounds. Matanzas, Cuba, Dec. 8. A. Marzol.

### Opinions of Producers.

Early in December we sent to actual honey-producers, scattered over the country, the following questions:

1. Is honey moving onto the market in your locality?
2. Are honey-buyers at all active or inquiring for honey?
3. Have honey-producers in your region made any effort to create or find a local market?
4. What is the wholesale price for honey in your locality? For extracted? For comb?
5. What is the retail price? For extracted? For comb?

Answers, as condensed by the editor, are as follows:

BRITISH COLUMBIA.—Honey is moving on to market, and buyers are active. There is a ready local market for all we can produce for some time to come. The wholesale price for extracted honey is



30c per lb., comb 42c per section. Retail price is 50c in one-pound glass jars for extracted, for comb 50c per section or \$1.75 in 4-pound cans.—W. J. Sheppard.

CALIFORNIA.—Buyers are not active. Producers are making very little effort to find a local market. Retail price of extracted honey is 20-25c; comb, 35-45c per section.—L. L. Andrews.

CALIFORNIA.—Buyers are not active. Producers are making efforts to find a local market. There seems to be no uniform price at wholesale. In fact, no offers. Retail price of extracted honey is 25-30c; comb, 30-35c—not any nice white in market.—M. H. Mendleson.

COLORADO.—Honey is not moving on to the market to any great extent, and buyers are not active. Efforts in the line of finding a local market have been mostly in the nature of crowding in on others' markets by cutting prices. Wholesale price of comb honey is about \$6.50 per case. For extracted honey the retail price is 14c and upward; for comb honey, the price is 20-30c per section.—J. A. Green.

FLORIDA.—Honey is not moving well, the buyers are active. Producers are making efforts to find local market. For extracted honey the wholesale price is 65c to \$1 a quart, and at retail \$1.00-1.50. No comb honey at present. Bees are in fine condition for winter over most of Florida.—C. H. Clute.

FLORIDA.—Honey is moving slowly, and buyers are not active. Producers are making efforts to find local market. Wholesale price of extracted honey is 15c; at retail, the price of some is as high as 25c.—Ward Lamkin.

IDAHO.—Honey is moving in part; comb all sold, and a few cases of extracted. Producers are trying to find a local market, but local demand can not absorb the big production. For extracted honey the wholesale price is 15-20c; carlots sold at 15c; fancy comb in carlots \$7.00 per case. The retail price of extracted is 40-50c per pint jar; comb often sold at or near the carlot price by small producers.—E. F. Atwater.

IOWA.—Honey is moving slowly, and buyers are not very active. Producers are not making any more effort than usual to find a local market, but local demand has been good. No extracted honey at wholesale has changed hands of late. Comb sells at wholesale for \$6.50-7.00 per case of 24 sections and retails at 30-35c. Extracted honey retails at 25-30c. All honeys here are largely out of first hands.—Frank Coverdale.

KANSAS.—Honey is moving fairly well. Buyers are not at all active. Producers have already sold out. Wholesale price of extracted honey is 25c, comb \$7.00 per case. Extracted retails at 28-30c, and comb at \$8.50 per case.—J. A. Nininger.

MARYLAND.—Honey moving very slowly. No buyers in Maryland. Some producers have tried to find a local market. Wholesale price for extracted honey is 22-24c, for comb 28-30c. Retail price of extracted is 35-45c, for comb 40-50c.—S. G. Crocker, Jr.

MISSOURI.—Honey all sold. Buyers are well supplied, very little demand. We were never able to supply home demand. For extracted honey the wholesale price is \$2.50-3.00 per gallon, and for fancy comb \$8.50 per case. Extracted is retailing at \$3.00-3.50 per gallon, and fancy comb at 40-50c.—J. W. Romberger.

NEBRASKA.—Honey moving very slowly. Wholesale price of extracted honey is 25c, comb 28-30c. Retail price for extracted 35c, comb 33-38c.—F. J. Harris.

NEW YORK.—Honey is moving slowly. Producers are making very little effort to find a local market. The prices are about the same as last month.—Geo. H. Rea.

OKLAHOMA.—Honey is moving slowly. Producers have made some effort to find a local market. Wholesale price of extracted honey is 25c, comb 35c. Retail price of extracted is 30c, comb 40-45c.—Chas. F. Stiles.

ONTARIO.—Honey is moving very slowly. Buyers are very cautious and not stocking to any extent. The smaller producers are working the local market in every way. Some of the large producers produce too much honey for local purposes. Wholesale price for extracted honey is 24-26c, comb 30-40c. Retail price for extracted is 30-40c, comb

40-55c. Dark extracted honey is moving slowly at considerably lower prices than light honey.—F. Eric Millen.

TEXAS, EAST.—Honey is moving slowly. Buyers are not active. Honey-buyers are trying to find a local market. The wholesale price of extracted honey is 15 to 20c; at retail, 20-25c. No comb. Strained honey is selling at 5c less than extracted.—T. A. Bowden.

TEXAS.—No honey in the hands of producers. Demand strong. Local market good. Wholesale price for extracted honey is 14c, comb 18c. Retail price for extracted 16c, comb 20c. Bees are in fine shape, with plenty of stores.—J. N. Mayes.

TEXAS.—Honey is moving on to the market, and buyers are normally active. Producers are making no effort to create a local market. Wholesale price for extracted honey is 10-14c, and the retail price is 18-20c.—H. B. Parks.

UTAH.—Honey is moving very nicely locally, but buyers in carlots are not active. Producers are trying, and finding it profitable, to create a local market. Wholesale price for extracted honey is 16c; at retail, 20-22c. No supply of comb honey.—M. A. Gill.

VIRGINIA.—Little demand for honey, and producers are making very little effort to find a local market. Wholesale price of extracted honey 20c, comb 32-38c. Retail price for extracted 25-35c, comb 50c.—J. H. Meek.

WASHINGTON.—Honey is not moving nor are buyers active. Producers are trying to find a local market. Wholesale price of extracted honey is about 18c, retail about 25c.—Geo. W. B. Saxton.

WISCONSIN.—Honey is moving in a local way thruout the entire State. I have received no reports from beekeepers concerning offers. Where beekeepers have attempted to create a local market, practically all of the crop has been disposed of. The wholesale price of extracted honey is 20-25c, practically no comb honey available. Retail price of extracted is 30-35c, comb 40-50c.—H. F. Wilson.

### Too Late for Classification.

WANTED—Bees to handle on shares. Address D. P. Hunt, Blum, Texas.

WILL exchange a new phonograph for an extractor and bee supplies. What have you? Off. Hegre, Madison, R. D. No. 2, Minn.

PACKAGE BEES and NUCLEI with ITALIAN QUEENS, for spring delivery. No disease in our yards. Write for prices and terms.

The Allenville Apiaries, Allenville, Ala.

WANTED—Single man, 32, wants work in modern apiary to learn business. Had bees eight years as sideline. South preferred. Start any time. Karl E. Colt, Brocton, N. Y.

WANTED—First-class county bee inspector, one who knows the business thoroughly. Answer giving particulars of your experience and say what salary you want. Work in California.

C. P. Dandy, El Centro, Calif.

WANTED—Beekeeper with some experience for work in our apiary on Key Biscayne during the season of 1921, to begin February 1 under the directions of C. E. Bartholomew, who was formerly with the Department of Agriculture.

Hugh M. Matheson, 1608 Ave. G., Miami, Fla.

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| 10-Pound Pails                    | 8.00   | 15.50   |         |
| 10-Pound Pails in boxes of six,   |        |         |         |
| per box,                          |        |         | \$1.40  |
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F. O. B. cars Lansing. No early order discounts allowed at above prices. Can make immediate shipment till present stock is exhausted.

Special prices on application on 12-pound and 16-pound comb honey cases.

Four per cent early order discount for January cash orders except as noted on friction-top pails listed above.

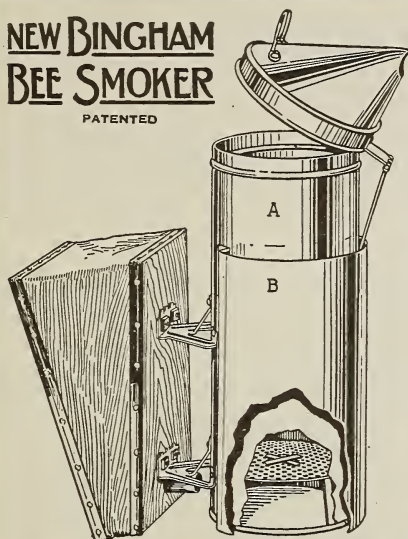


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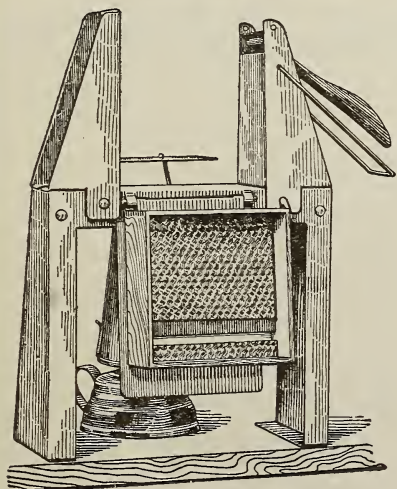
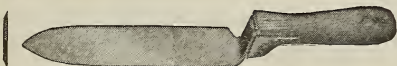
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Lansing, Michigan

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PATENTED



THUMB REST



The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries. It is the all-important tool of the most extensive honey producers in the World. It is now made in five sizes.

| Postage extra               | Size of stove inches. | Shipping weight lbs. |
|-----------------------------|-----------------------|----------------------|
| Big Smoke, with shield..... | 4 x10                 | 3                    |
| Big Smoke, no shield.....   | 4 x10                 | 3                    |
| Smoke Engine .....          | 4 x7                  | 2 ¼                  |
| Doctor .....                | 3 ½ x7                | 2                    |
| Conqueror .....             | 3 x7                  | 1 ¾                  |
| Little Wonder .....         | 3 x5 ½                | 1 ½                  |

The Big Smoke has just been produced in response to a demand for a larger-size smoker, one that will hold more fuel, require filling less often, from extensive bee handlers.

East Lansing, Mich., May 10, 1920.

A. G. Woodman Co., Grand Rapids, Mich.

Dear Mr. Woodman:—I have now had several weeks' opportunity to try out the New Smoker called the Big Smoke, with the guard about the fire pot. The smoker is even more than I anticipated and unless something else is brought out that is still better, you can be assured that this particular one will be standard equipment for this place from now on.

B. F. Kindig,

State Inspector of Apiaries.

The Genuine Bingham Honey Uncapping Knife is manufactured by us here at Grand Rapids and is made of the finest quality steel. These thin-bladed knives, as furnished by Mr. Bingham, gave the best of satisfaction, as the old timers will remember. Our Perfect Grip Cold Handle is one of the improvements.

The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

### TIN HONEY PACKAGES

|     |  |
|-----|--|
| 2   | lb. Friction top cans, cases of 24.    |
| 2   | lb. Friction top cans, crates of 612.  |
| 2 ½ | lb. Friction top cans, cases of 24.    |
| 2 ½ | lb. Friction top cans, crates of 450.  |
| 5   | lb. Friction top pails, cases of 12.   |
| 5   | lb. Friction top pails, crates of 100. |
| 5   | lb. Friction top pails, crates of 200. |
| 10  | lb. Friction top pails, cases of 6.    |
| 10  | lb. Friction top pails, crates of 100. |

Special prices on shipments direct from Chicago now.

|     |                                |         |
|-----|--------------------------------|---------|
| 100 | 5-lb. friction top pails.....  | \$ 8.50 |
| 100 | 10-lb. friction top pails..... | 12.50   |

Ask for our special money-saving prices, stating quantity wanted.

Send us an itemized list of your requirements and let us figure on your goods for 1921. Our new catalog will be issued about Jan. 1.

**A. G. Woodman Co., Grand Rapids, Mich., U. S. A.**

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HAVE YOU EVER thought how many beekeeping devices, hives, etc., once boomed and sold extensively have had a mushroom sale—to be discarded as worthless when exposed to the light of careful investigation and thorough trial?

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Why? Because we put out only such articles as have proven thoroughly satisfactory to us; those which we have ourselves used and tested extensively and long.

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# GLEANINGS IN BEE CULTURE

JANUARY, 1921

## EDITORIAL

AS I WRITE on this 17th of December, everybody is thinking of Christmas giving,

**"Give Us This  
Day Our  
Daily Bread."**

and I fear giving but little thought of the, not hundreds and thousands but millions, who are starving for food. The Christian Herald will tell you all about it, and they are also prepared to get the food quickly and surely to the suffering ones. At this very time our farmers are suffering because of the low prices offered for our great crops of grain, even burning good corn for fuel. Now, ye followers of the Lord Jesus Christ, and all others who love suffering humanity, "get busy" and "give gifts" to starving women and children by sending the money to purchase the grain of the farmers and at the same time giving "daily bread" to the starving multitudes, and thus "laying up treasure in heaven," instead of here on earth. "Prove me now, saith the Lord of Hosts, if I will not open you the windows of heaven, and pour you out a blessing, that there shall not be room enough to receive it."

A. I. Root.

would be attached to his statement. Certain New York beekeepers from ignorance of soil conditions have made mistakes in locating out-apiaries."

Dr. E. F. Phillips, in charge of bee investigations for the United States Department of Agriculture, is going deeply into the study of soils as related to bee culture. He has recently had an elaborate soil-measuring apparatus put in his department.

FROM VARIOUS sources come suggestions that a fund should be raised by American

**A Memorial**

**for Dr. C. C. Miller.**

beekeepers to establish a permanent memorial for the late lamented Dr. C. C. Miller. Gleanings is in receipt of a number of letters suggesting that such action be taken. Mr. C. P. Dadant in the American Bee Journal calls attention to the matter and proposes the establishment of a research scholarship in beekeeping in an agricultural college as a memorial, E. G. LeStourgeon of San Antonio, Tex., president of the American Honey Producers' League, warmly seconds this idea, and suggests Mr. Dadant as chairman of a committee of three or five members, to be appointed by him, who shall have the whole matter in charge.

Gleanings heartily favors a lasting memorial for Dr. Miller, and seconds the nomination of Mr. C. P. Dadant as chairman of a committee to undertake the raising of funds and deciding as to what form the memorial shall take. We would only suggest that a popular subscription be asked in which even a dime given by any true friend of the late great beekeeper shall be as welcome as a dollar or ten dollars, for we feel sure that he would appreciate the number of his friends rather than their ability to give. Let thousands of beekeepers contribute, much or little, as they are able, to this good and lasting cause. We can do nothing better than to perpetuate the virtues and memory of a good man.

Gleanings will help in every way it can in this cause, and is ready to receive contributions. Lead the way, Messrs. Dadant and LeStourgeon.

DO BEEKEEPERS realize how much their prosperity depends on the character of the

**Soil and  
the Beekeeper.**

soil in their respective localities? Do they realize, too, how important to them is the science of soils, and how much they have to hope for from the increased attention that is everywhere being given to the study and testing of soils?

That great authority on honey plants, John H. Lovell, has recently expressed the following opinion: "It is becoming more and more clear that the conclusions of beekeepers in regard to nectar secretions must be accepted with reserve. For example, white clover does not secrete nectar well, even when abundant, on an acid soil; and should I today receive a report from a New York beekeeper that white clover was an excellent honey plant in his locality, I should at once refer to the soil map of New York, and, if I found that the soils of his section were acid, little importance

THE FARMERS' BULLETIN on Alsike clover, to which reference has been made in our Books and Bulletins Department, should be in the hands of every beekeeper in the clover regions, but better still it should be in the hands of every farmer within this region. As the farms grow older and the difficulties in securing a stand of red clover increase, this excellent honey plant is gaining in favor among farmers, especially when mixed with red clover or timothy, thus insuring a stand on cold or wet soil where red clover fails to catch. If you are in the clover region, why not see that your farmer neighbor gets one of these bulletins?



### Alsike Clover.

THE ANNOUNCEMENT of the discovery of the cause of the "Isle of Wight" disease, which appeared in press reports in England last month, has been confirmed by later reports, and we hope that Dr. Rennie's report on the investigations leading to this discovery will be published soon. According to the press reports the cause of the Isle of Wight disease is a mite "which enters a particular breathing tube of the bee, feeds on the bee's blood, blocks the air passage, and thus cuts off the supply of oxygen from certain muscles and nerve centers concerned with locomotion." The name *Tarsonemes Woodi* has been proposed for this mite, in honor of A. H. Wood, who, it appears, assisted in financing the investigation.



### Isle of Wight Disease.

It is to be hoped that the many puzzling things in connection with this disease will be cleared up by this discovery. It may also throw some new light upon the diseases of adult bees in this country.

WEATHER CONDITIONS during November were not favorable to the kind of cleansing flight which the beekeepers who winter in the cellar like to see just before putting



### Unsatisfactory Flights Before Cellaring.

their bees away for the winter. It was not cold enough early in the month to put the bees in a condition to desire a flight, and during the few days when flight was possible later in the month the bees did not fly freely, tho within the southern range of cellar wintering these flights were probably adequate. There was no time late in November when the temperature was high enough to tempt the bees not needing a cleansing flight to fly freely, and many bees were, therefore, put into the cellar without a satisfactory cleansing flight. It is to be hoped that this condition is not a serious one, since the bees were not exposed to very low temperatures before being put into

the cellar; but, unless the stores are of the best quality, the bees may become quite restless before they can be taken out of the cellar next spring. Here at Medina the bees outside flew freely on December 12 and 13. Colonies wintering outside are now in excellent condition to endure a period of confinement if necessary.

IT IS with great satisfaction that we announce that Morley Pettit will contribute a series of articles for Gleanings, the first of this series appearing in this issue. Mr. Pettit needs no introduction



### Business Methods in Beekeeping.

to our readers, since he has been prominent among beekeepers for some time as the founder of the department of beekeeping in the Ontario Agricultural College, and more recently as a successful honey producer at Georgetown, Ontario. Mr. Pettit and his sister, Miss R. B. Pettit, have built up a thriving business in honey production by applying carefully thought-out business principles to the operation of a series of out-apiaries, and he now proposes to tell the readers of Gleanings how this has been accomplished.

AT THE very beginning of the recent great expansion in beekeeping by the establishment of out-apiaries for extracted-honey production, W. Z. Hutchinson launched the slogan, "Keep More Bees Per Hive."



### Keep More Bees Per Hive.

More Bees." Later, when it began to look as tho some of the big fellows had gone beyond their limit as to number of colonies, the slogan was changed to "Keep Bees Better" and "Keep Better Bees." Now comes Jay Smith, in the Western Honey Bee, with a new slogan that fits exactly the present-day needs and the present-day tendency in beekeeping when he says "Keep More Bees Per Hive." This should be the beekeepers' slogan for 1921 and perhaps for many years to come.

AT THE Ontario convention the question was raised as to the possibility of the beekeepers' being able



### Distinguishing Between Brood Diseases.

to distinguish with any degree of certainty between American foul brood and European foul brood without sending a sample for laboratory diagnosis. It was brought out in the discussion of this question that there is still much confusion among beekeepers and even among some of the inspectors in regard to these brood diseases.

The beekeeper who has had experience



with American foul brood alone finds the problem of diagnosis comparatively simple since in this disease the symptoms are fairly constant. In the case of European foul brood, however, diagnosis from appearance only is more difficult since in this disease there is a wide variation in the appearance of the dead larvae or pupae. It sometimes happens that experienced beekeepers who have long dealt with American foul brood and who have had no question as to their ability to diagnose this trouble correctly, will suddenly lose confidence in their ability in this respect after coming in contact with the varying symptoms of European foul brood. Many beekeepers have decided that there is no use trying to learn to distinguish between the two brood diseases since, as they say, they are sometimes much alike in appearance. Some have even contended that there is a third disease which behaves somewhat like European foul brood but resembles American foul brood, while others contend that there are two or three kinds of European foul brood.

The thing to remember is that the same organism is responsible for the death of the larvae or pupae in this disease even though there is a great difference in the appearance after death. The truth is, however, the beekeeper can learn to distinguish between these two diseases with sufficient accuracy for his needs in most cases, if he is willing to make a careful study of the gross appearance and behavior of the two diseases. This is a good time to study the descriptions given in the bulletins on bee diseases from the Bureau of Entomology at Washington, D. C., as well as the various state publications and the text-books on beekeeping.

Inspectors of apiaries especially should be thoroughly familiar with the variations in the gross appearance of European foul brood as well as the finer distinctions between the two diseases in those cases in which European foul brood resembles American foul brood in appearance, for it is of utmost importance in the treatment to know which of the brood diseases is present. If the wrong treatment is given the trouble is usually made worse than before, and many expensive mistakes have been made thru mistaken diagnosis both by beekeepers and inspectors. In all cases of doubt a sample should be sent to the Bureau of Entomology at Washington for a laboratory examination.



SINCE OUR last issue the honey market in a jobbing way has not improved. There are two reasons for this:



#### The Honey Market Situation.

(1) Buyers' waiting to see what is going to happen, (2) no export demand. While a little honey has gone to Europe, the amounts

have been so small as to be practically negligible.

In the meantime the sugar market continues to decline. When honey and sugar were competitors a fall in sugar meant a corresponding drop in honey; but that is hardly true today. During the great war, sugar could be had in only very limited quantities, or not exceeding two pounds at retail. Europe could get scarcely any. Honey and cane syrup, and especially honey, then began to go to Europe in car lots to take its place. Honey was bought and used in place of sugar in a very large way all over this country. While it is still used by bakers, we must consider that honey now stands on its own bottom to a very great extent. No matter if granulated white sugar does go down in price, we are not now to expect that honey will, in consequence, follow suit. Sugar, in car lots, can now be had at one-third or even one-fourth of the former inflated price. Honey, on the contrary, in car lots has dropped scarcely more than a half from the prices that ruled during the war. This is very encouraging in that it goes to show that in a very large way honey is not now acting in sympathy with sugar. It has gone back to pre-war conditions in that it holds a field of its own apart from sugar.

Still further, it is encouraging to note that, in a retail way, extracted honey is almost if not entirely up to war prices now. While it will probably not stay there, the fact that it does hold its own so long and so tenaciously when sugar at retail has made a sharp decline, suggests the possibility that the jobbing price of honey may come up.

It is further encouraging to note that, while there are a few large stocks of western honey available in car lots, honey east of the Mississippi has been pretty well used up.

It is encouraging to note further that comb honey, both in car lots and in a retail way, is still holding even a higher price than it did during the war. The beekeeper who can produce comb honey, therefore, should produce all he can for the next season. In saying this it should be understood that not all honey is suitable for putting in sections. For example, some southern honeys are very much inclined to show ooze, or look watery when held in the combs. But there is no reason why clover of all kinds, raspberry, alfalfa, sage, orange, and pure gallberry should not be produced in the form of comb honey; and the wise beekeeper who has the equipment and locality, in view of the high prices that this kind of honey is commanding, will put himself in position where he can produce that which will have a big market at high prices next season. If he has not the equipment he should lose no time in getting it, as it takes time to get comb-honey supers all ready for the hives.

**D**URING the Great War we read in the press reports from day to day of the "morale" of our brave fighting men, or of the lack of it in the

armies of the enemy. This has given us a name for a desirable condition which we have come to call "colony morale." Now it would seem fitting to apply the same term to the beekeeper and his helpers, and speak of "Apiary Morale." As the workers of the bee colony are kept in working mood by proper conditions, so the morale of the human workers is maintained by good management.

Success in beekeeping depends largely on the mental attitude of the beekeeper. He must have faith in his business as a business, and not regard it as a sideline or an experiment or a stepping-stone. What attracted me most in the teachings of the late lamented Dr. C. C. Miller was the fact that he resigned both a musical and a medical career, in each of which his prospects were bright, and taught the world that beekeeping, a far more obscure calling then even than now, is one good road to health, happiness, and a comfortable income.

The beekeeper who has made a right start by facing the fact that he has tackled a man's job worthy of his best effort, must have faith in his locality, or get into one which he can trust. I am coming to think more as the years go by that there is less variation in localities than in the beekeepers who occupy them. Last but not least, the beekeeper who would succeed must have faith in himself and his methods, and not be turned about by every wind that blows. In order to have this faith he must have within himself the elements which make for success in any line: Good health, diligence, foresight, close observation, careful attention to details but a sense of proportion. He must have the will-power to do the profitable things and to leave undone the unprofitable. He should be willing to take a chance when it is a chance of increased profit, but never when it is a chance of ordinary success versus failure. The really successful beekeeper knows the "Why?" of the various manipulations; he understands the principles involved in good beekeeping and bases all his methods and appliances on these principles, and not on what he prefers or someone else says.

#### Office and Equipment.

Having all these elements of success within himself, the one who makes a success of a large commercial honey-producing enterprise works out a system of management which keeps all hands alert and the work running like clockwork in the most difficult and irregular of seasons. This takes

## REAL APIARY MANAGEMENT

### *The Beekeeper as a Business Manager. How to Increase the Morale of the Helpers*

By Morley Pettit

not only careful planning but an abundance of supplies properly distributed and a good staff of active and willing helpers.

At the Pettit Apiaries the

plans center in the little office next to the carpenter shop upstairs in the main building. It is just a small room plainly finished with a good desk and comfortable swivel chair, and a stove for the cool days of spring and fall. Around the walls are shelves of books, journals, and bulletins, and files for records and letters. One window overlooks the home apiary for inspiration, altho I can assure you that not much daylight time is spent here during the active season. This office is connected by telephone with the dwelling where the sister member of the firm has her desk for taking care of the selling and shipping records. In addition to being sales-manager, Miss R. B. Pettit is the queen-breeder of the firm and looks after all queenrearing and increase. With one or two helpers for the muscular work, she takes her share of apiary management right thru the season.

In 1920 there were seven yards with about 450 colonies, spring count. These were increased to 567 and will be in eight or nine yards in 1921. The weekly visit, which has always been our rule, has been extended to a trip to each yard once in eight or ten days according to conditions. Practically all supplies are kept at home to be overhauled, cleaned, sorted, etc., and taken to the different yards on the regular trips as needed. To simplify the work we have standardized equipment, as far as possible without throwing away too much material that is still useful or refusing to adopt changes which are sure to increase profits. In fact, we keep an experimental department going all the time.

Transportation is by means of a ton truck, a light truck, and a Dodge roadster which has good carrying space for queen-rearing appliances in the back. Whichever two of the cars the loads require go out each day, so we can do up one large yard or two smaller ones daily when necessary. We use three student helpers, who come to us in April and even have to learn the names of some of the appliances. They supply muscular activity and try to follow directions, while we plan and direct and do a share of the work.

There has been a great deal of boasting on the part of beekeepers about how many colonies one man could manage alone. It is true that efficiency in this line should be cultivated to the fullest extent. At the same time I feel that a season spent in apiary work is just that many months measured off my life. If I have spent those months toiling harder and longer hours than



my strength warrants, they have been wasted; but if I can profitably employ help and equipment so as to make the work pleasant, how much better it is! On the other hand, I think it pays to employ help enough so I can attend to details for which many producers say they have not time. I endeavor to strike the happy medium between management which is too intensive and that which extends so far as to become unprofitable.

#### Management Facilitated by Useful Records and Memoranda.

Besides having the best of equipment and plenty of it we study constantly for the best and simplest of methods. These also are standardized as far as possible and are based on sound principles of bee-behavior so far as they have been determined. Not only is each colony given individual attention, but varying conditions of each location are noted on the different trips. For this purpose we have a set of records which though exceedingly simple enable us to plan intelligently for the next trip. The individual hive records simply show the age and percentage of the queen, and the number of supers of honey taken. The dates of dequeening and requeening are also noted on the hive. That is practically all the colony records kept. The queen-rearing records are another matter.

The record of visits to each apiary is kept on a plain 3 x 5-inch card, which bears a letter representing the name of the yard in question, such as N for the North yard, H for the Home yard, and so on. These yard cards are filed in the desk according to the dates on which the next visits are to be made. Each visit to the N yard, for instance, is recorded on the N yard card with one or two words showing what was done, and the nature of conditions found; e. g., "May 11, finish clipping, supering;" "May 26, unpack and super, all have 1 and many 2 supers." If the record shows a yard well supered and no swarming impulse, and if the weather is backward the next visit may be delayed provided queen-rearing operations there do not demand attention. To avoid extra trips we must be sure to take all supplies that may be needed on the regular trip. While at the yard I jot down on a piece of memorandum paper items of importance to remember when preparing for the next trip, such as the nature of work just completed, special notes on condition of bees and supers, and supplies needed next day which are being left stored or must be brought. I find this absolutely necessary and yet sometimes have to drive myself to do it, as it is usually a scramble to get thru in good time, and it is all so plain then that there seems no danger of forgetting. But tomorrow it will be a different yard, and the next day another, until the memory of details becomes scrambled.

There is a particular pocket where these

memoranda go, and this pocket is emptied into a certain wire basket on the desk, and this basket is overhauled frequently in the evenings or early mornings to write up the records and notes for future trips. Records go on the yard cards concerned, as indicated above. Notes of supplies left or to be taken are used for making out the load list for that yard on the next trip. The load list for each trip is another item which seems like a small matter, yet I have found it very helpful in relieving me of responsibility. The following would be a typical list handed to the man who is to go with me to the K yard. "List for K, Mon., June 28/20. Ton truck, water radiator, oil motor, pump tires, 65-lb, 50 supers, combs, 25 queen-excluders, 10 cloths, smokers, veils, lunches, saw, hammer, nails, hive-tools, drinking water." He carries this list around with him while he is making up the load and checks it over the last thing. If he did not have the list we might arrive minus some essential, such as smokers. I have never known the lunches to be forgotten. For personal use I also make a list of work to be done which I might forget. These lists are fastened with a wire clip to the yard card, which is filed ahead under the date assigned for the next trip. This is simply the "tickler system," so common in business offices.

If we ever get where we have more store combs than we are likely to need, it will enable us to manage more yards with the same number of trips. So long as we are increasing, this is not likely to be, especially since we are not at home for making up supplies in winter, but must work that in with the work of the active season. If each colony before the beginning of the honey flow could be given all the combs it would likely fill, the next visit could be longer delayed. The next best is to give each two or three supers, then add foundation as further room is needed, keeping some combs in reserve at home for a big run in any yards that are so fortunate as to get it. The yard card records are particularly valuable here, and the truck with capacity for a hundred supers enables reinforcements of storage space to be brought quickly to the front where there is the greatest need.

#### Outline of Season's Work.

We open up and do shop work in April. As weather permits, queens are clipped and first supers added in the winter cases. Unpacking is finished in May before a second super would be needed. Queen-rearing is started as early as possible so that failing and swarming queens may be replaced as soon as discovered. By the latter I mean those whose bees persist in building cells. We extract in late July and early August and return most of the supers to the hives. September is for final taking off and packing, October for feeding, and November for finishing up.

We find more advantages in the central-

plant system from year to year. Specializing is essential to the highest success. Very few men succeed in practicing law and medicine at the same time. I would not know how to manage without a fairly well-equipped office. Others may be able to keep in mind a picture of conditions at all their yards, and carry their plans in their heads, but where

so much has to be crowded into a few months it is risky. Then we have a variety of locations, and always changeable seasons. With plans well-charted and work well up, we are ready for emergencies. Otherwise one is liable to see what should have been done after it is too late.

Georgetown, Ont.



I SHALL not tell you how many colonies this bee-keeping has nor where they are located; but his beeoperations are scattered thru North Carolina,

South Carolina, and Porto Rico. You would take him to be a college professor or a manager of a steel plant. Modest to a fault, he has a polished mannerism that is delightful. He is also something of a student of human

## BEEKEEPING IN THE SOUTH

*Elton Warner, the Bee-king of  
Several States and of Porto Rico*

By E. R. Root

different places along the swamps he pulled out some elaborate soil-maps which he had studied very carefully. These are maps that almost

any one can obtain from the Department of Agriculture of each of the various States. After having studied the soil conditions he afterward made personal visits to inspect the honey flora of the locality.

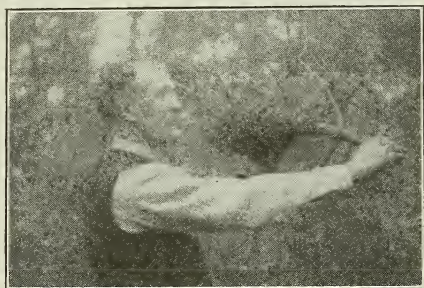


Fig. 1.—Mr. Elton Warner.

nature, as he apparently knows how to handle his helpers and get the most out of them. Besides being one of the most extensive beekeepers in the world, he is a real all-around genius.



Fig. 2.—Elton Warner and his beeyard force; picture taken near Mullins, N. C. From left to right, they are: S. W. Savage, Mr. Warner, J. P. Rodriguez, and N. E. Ladd.

I had the pleasure of spending several days with him in two different States, looking over his bees; and when I came to ask him why he happened to locate in so many

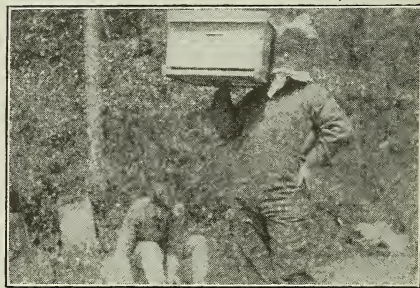


Fig. 3.—The big fellow is the Ladd that can pick up 13-frame hives full of bees as easy as pie.

Having selected his location, he next buys bees in box hives and then transfers them. He now has some very beautiful up-to-date

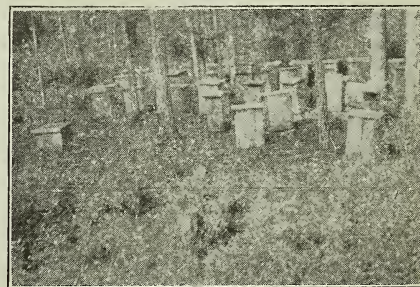


Fig. 4.—One of the box-hive apiaries that Elton Warner bought and transferred.

yards, located near the swamps where abound the tupelo and the gum trees and on the uplands the gallberry.

While Mr. Warner has his headquarters



at Asheville, N. C., his main bee operations are confined to South Carolina and Porto Rico. This simply means that his yards are located thousands of miles apart. It is a big job to handle yards all within a range of a hundred miles; but it is a vastly big-

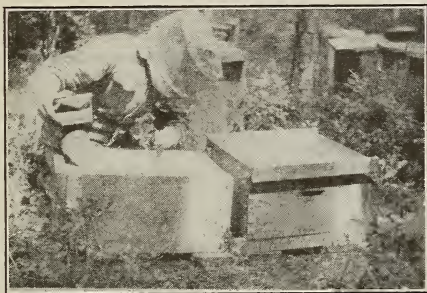


Fig. 5.—Mr. Warner smoking and drumming bees from a box-hive into a modern hive.

ger job to manage helpers and oversee yards scattered all the way from North Carolina to Porto Rico. Mr. Warner is not only a first-class beekeeper, but he is also a business man—not one of the kind that splits a penny or drives a sharp bargain, but one who studies the times, and particularly the markets. While he was born in the United States he has spent a large part of his life in Porto Rico. He speaks Spanish fluently, and one of his best yard men, Mr. Rodriguez, is a native Porto Rican.

#### Uses the 13-Frame Hive.

We have heard a great deal about large hives, especially the thirteen-frame ones. I

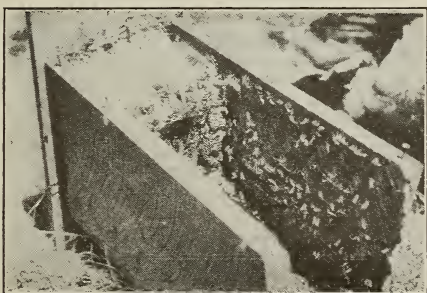


Fig. 6.—After the bees are drummed out the combs are cut out; but only brood inserted in the frames.

was not a little surprised to find that our friend is a user of this big hive, and a strong advocate of not only strong colonies but also large brood-chambers. When we went thru his apiaries it was easy to see why he was successful, because he had colonies big enough so that they were ready to do a rushing business when the honey flow began.

I took a number of photos of Mr. Warner in action. The legend under each of the pictures will explain.

#### His Plan of "Drumming Out."

Mr. Warner has a manner of drumming the bees from a "gum" laid on its side into a movable-frame hive, on the plan illustrated in Fig. 5, which shows him in the act of doing this trick of the trade, and it is not so very difficult either. After the bees are drummed out the brood is cut out and transferred to regular frames. The rest of the space is then filled out with frames of foundation. I wish to call your attention particularly to the position of Mr. Warner's smoker in his right hand as seen in Fig. 5. Before he begins a job of drumming he bores a  $\frac{3}{4}$ -inch hole near the top of the "gum"

or box hive. It is then laid on its side with the open bottom placed as close as possible to the entrance of one of his regular 13-frame hives containing frames of foundation. With his smoker he blows volumes of smoke into the hole before mentioned, and at the same time keeps up a vigorous drumming with a hammer as shown.

Mr. Warner likes this manner better because it is less trouble to place the old log gum and the modern hive on the same level

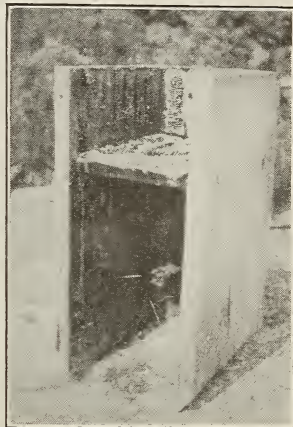


Fig. 7.—Some of these old "gums" have a super or surplus department.



Fig. 8.—One of Warner's South Carolina apiaries.

than it is to place one on top of the other. I watched him drum out a number of colonies in this way, and it appeared to me that they would run in on a horizontal plane as well as they would vertically into a box placed on top. After practically all



the bees have been drummed out it is a simple matter to remove the combs of brood and put them into frames.

I want to introduce you to some of Mr. Warner's helpers. After considerable persuasion I got them in front of my Graflex,

and the result is shown in Fig. 2. I call attention in particular to Mr. Ladd, the man who seems to be built just right to handle 13-frame hives. You would say that he is the Ladd that could do the trick if you could see him in action (Fig. 3).



WHEN the honey-extractor first came into use, beekeepers quickly discovered that greater yields are secured when the combs are emptied and returned to the bees to be refilled, than when the bees are compelled to build new comb each time. The honey-extractor was at that time heralded as a means of more than doubling the yield per colony, because after the combs were once built, the bees were saved trouble of further comb-building.

Later, when comb foundation was invented, it was thought that its use would be practically equivalent to the use of empty combs for surplus honey, and that this new product would enable the bees to store practically as much comb honey as extracted honey. In this beekeepers were disappointed, and it is now generally agreed that greater yields are secured when producing extracted honey. No agreement, however, has ever been reached as to just how much more extracted honey a colony will produce than comb honey.

#### Cost of Wax Production and Comb Building.

In most of the discussions of this subject the difference in the yield for the two types of honey is attributed to the amount of honey that is consumed in the elaboration of wax for comb-building. Some of the earliest experiments in wax production indicated that 20 pounds of honey are consumed by the bees in the production of one pound of wax. For a long time this was accepted as the true figure. Since comb sufficient to hold 100 pounds of honey contains from four to five pounds of wax, the bees, in secreting the wax necessary to build this amount of comb, would consume nearly an additional 100 pounds of honey, if the ratio of 20 pounds of honey to one pound of wax is assumed to be correct—to say nothing of the time and energy used by the bees in secreting the wax and building the comb. From this, as well as from actual results year after year in producing the two types of honey it was believed by many that two pounds of extracted honey could be pro-

## COMB HONEY PRODUCTION

*Spirit of Workers Most Important.  
Cost of Wax Production. Conditions Under Which Yields of Comb Honey May Nearly Equal That of Extracted*

By Geo. S. Demuth

considerable wax is used in extracted-honey production in elongating cells and capping the honey.

The ratio of two pounds of extracted honey to one pound of comb honey is probably not far from correct as an average for all localities, all seasons, and all beekeepers; but, in some locations during favorable seasons, the skilled comb-honey producer secures nearly as much comb honey per colony as extracted honey. This has led to a revision downward of the amount of honey supposed to be required to produce a pound of wax, which present-day authorities put at from six to twenty pounds.

#### Involuntary Wax-Secretion.

It is believed by many that a considerable amount of wax is secreted during a good honey flow whether it is needed or not, and some writers have contended that under certain conditions much of this wax is wasted if the bees are not given an opportunity to build comb. One of the first indications of the beginning of the honey flow is the appearance of new wax, used to elongate some of the cells or plastered around in lumps on the combs and frames in the upper part of the hive. Young bees, just before they become field workers, apparently secrete wax readily when they fill themselves with raw nectar, as they do during a good honey flow, and when combs are not needed. Even field bees often have tiny wax scales protruding from their wax pockets when caught as they are working on the flowers.

During more recent years many producers of extracted honey have been cutting deeper into the comb when uncapping. One object of this is the production of wax at but little cost, the theory being that the wax needed to elongate the cells when the combs are given back to the bees would otherwise be wasted during a heavy honey flow especially in colonies having an abundance of young

duced to one pound of comb honey. When full sheets of foundation are used in the sections the amount of wax thus furnished is about one pound for each 100 pounds of honey; but, to offset this, con-

bees of comb-building age. Those who have tried this have not noticed any reduction in the yield; because of the extra wax secured in this way, and no one knows how thin the combs could be shaved down without reducing the yield. Bees will deposit nectar in cells not more than one-eighth inch deep, and then add wax as needed in elongating the cells; while they refuse to draw out foundation, unless the need of more room is imminent.

Under favorable conditions a few frames of foundation mixed with empty combs may be drawn out and filled with no perceptible reduction in the yield; but, if none but frames of foundation are given, the yield is usually considerably reduced. It is apparent, therefore, that the difference in yield of the two types of honey can not be calculated from the number of pounds of honey needed to produce one pound of wax; and, conversely, the number of pounds of honey required to produce a pound of wax can not be computed from the difference in yield between the two types of honey.

#### Great Variation in Yield Under Different Conditions.

During some seasons the character of the honey flow may be such that practically no comb honey is secured, while in the same locality a fair crop of extracted honey may be produced. Yet in the next season in the same locality the yield of the two types of honey may be nearly equal. In some locations the character of the honey flow is such that the average yield of comb honey during a series of years may be even less than one-half that of extracted honey, while in other locations the average yield of comb honey during a series of years may be 75 or 80 per cent of that of extracted honey; and, finally, under precisely the same conditions as to location and season the beekeeper without skill and experience in comb-honey production will secure less than half the yield in comb honey as compared with extracted honey, while the skilled comb-honey producer may secure nearly as much comb honey as extracted honey.

Undoubtedly, the extra amount of wax secretion necessary in comb-honey production is a factor in reducing the yield; but it is by no means the only one, and under some conditions it becomes of minor importance. The condition of the colonies, the character of the honey flow, and weather conditions may have greater influence on the difference in yield than the secretion of wax and comb-building.

At the close of the honey flow there is usually more honey and less brood in the brood-chamber when comb honey is produced. If there is no later honey flow, this additional honey in the brood-chamber must be considered when comparing the yield with colonies used for producing extracted honey. In addition to this, there are fewer

bees to "board" during the late summer. On the other hand, if there is a later honey flow of considerable importance, the greater number of young bees in the colonies used for producing extracted honey may result in a great gain in surplus at the end of the season over those used for comb-honey production. The difference in yield in these cases can not be greatly influenced by wax secretion and comb-building.

#### Difference in the Spirit with Which Bees Work.

Probably the greatest factor in the causes of the difference in yield of the two types of honey is in the difference in the spirit with which the bees work, and the rapidity with which they expand their activities thruout a large super space when empty combs are given in the supers instead of frames of foundation. It sometimes happens that conditions are such that the work of the colony becomes stagnant even during a good honey flow when comb honey is being produced; but this does not often happen when extracted honey is being produced, if sufficient room is given.

The problem of swarm control is so closely associated with the spirit with which the bees work that it is difficult in some instances to separate these two things. Much of the loss in yield in comb-honey production comes about by some of the colonies being thrown out of condition for best work while preparing to swarm or because of some hitch in the management in the control of swarming. When it becomes necessary for the beekeeper to interfere to prevent the issuing of a swarm, the colony may respond to his treatment by a period of loafing, as if to get even with the "big boss" who presumes to meddle with its private affairs. Thus the skill of the comb-honey producer is sometimes taxed to the limit in controlling swarming and at the same time keeping the bees in the best working mood.

Since most of the conditions which tend to bring on swarming are the same conditions that tend to reduce the spirit with which the bees work, the beekeeper, who by careful management is able to stimulate his colony to work with the greatest possible vigor from the very beginning of the honey flow, not only increases his yield because of better work, but at the same time greatly reduces the tendency to swarm.

It sometimes appears that the spirit with which the bees work is of even greater importance in securing a large yield than the number of workers, and herein, to a great extent, is the key to successful comb-honey production. The beekeeper who can do these things, if located in a region suitable for comb-honey production, will probably produce about as many sections of comb honey per colony as pounds of extracted.



## THE VALUE OF PACKAGE BEES

*Pays for Equipment First Year  
Best Time for Receiving Packages*

By H. F. Wilson

**I**F you want to increase rapidly and cannot buy full colonies at a fair price, buy package bees — it pays. This is the recommendation which we shall

in the future make to the many Wisconsin beekeepers who ask that question. Our experience is limited to two years, and only 115 packages have been used in the tests, but we count the results of as much value as if 1000 packages had been used. If any beekeeper has not had excellent success with package bees, blame everybody and everything but the bees; they were not at fault.

In the March (1920) number of Gleanings the reader will find a first report on 25 two-pound packages, half of them shipped by parcel post and the remainder by express. A final report on that experiment is here given to complete the story.

Starting with 25 two-pound packages in 1919, this number was increased to 31 at the end of the season. At that time these colonies all appeared to have for winter sufficient stores which were supposed to be of good quality. However, dysentery developed during the winter and the losses were quite severe—in fact, so bad that the remaining bees were set out on the 21st of March to get a flight and left out.

Three colonies died out in the cellar, and

spring was then 11 colonies, or 30 per cent.

The honey flow for 1920 was very good and provided the finest honey that I have ever seen from clover. The total amount of honey secured in this test can only be estimated, as more than 500 pounds was reserved and given back to the bees in place of dark fall honey. Approximately 1400 pounds of surplus was extracted from 17 colonies. Three colonies for some reason failed to work at all until near the end of the honey flow when they were requeneed. Considering the 20 colonies as the unit from which the crop was taken, we have an average of 70 pounds per colony.

It should also be stated that the crop would have been larger except for some experiments in trying to queen from the top, following the Demaree plan of supering. Raising young queens in the top was found to be very successful, in fact, too successful, except where one is working for increase. The writer was obliged to be away for periods of several days at a time during the summer, and after one of these trips young queens and four to five frames of

the others were quite weak or only fair, so that the bees were united on May 1 to form 20 fair-to-good colonies. The actual loss between fall and



Mrs. O. W. Hildreth, assistant secretary Wisconsin State Beekeepers' Association, and her 10 three-pound packages. Mrs. Hildreth paid \$165 for her total equipment, and produced more than \$160 worth of honey the last season.

brood were found where full supers of honey had previously been. The net result was that honey had been turned into bees, which must be considered in this report.

Twenty-three four-frame nuclei were made from the 20 colonies, and these all built up into strong colonies by fall. The larger part of the honey secured has already been disposed of at 28 cents per pound above the cost of containers, so that the total value of the crop may be figured at 28 cents per pound or \$392.00.

The cost for maintenance in 1920 follows:

|   |          |
|---|----------|
| Sugar for feeding bees.....                 | \$ 38.00 |
| Wire for frames .....                       | 2.47     |
| 30 hive-bodies with frames and foundation.. | 65.00    |
| Paint for hives.....                        | 7.00     |
| One uncapping knife .....                   | 5.00     |
| Cheesecloth .....                           | .80      |
| 1 galvanized can .....                      | 1.40     |
| Labor 109 hours at 50 cents per hour....    | 54.50    |

|                                    |          |
|------------------------------------|----------|
| Total .....                        | \$174.67 |
| Total cost of apiary for 1919..... | 439.17   |
| Total cost of apiary for 1920..... | 174.67   |

|  |          |
|--|----------|
| Total cost .....                         | \$613.84 |
| Total receipts, 1919 .....               | \$288.00 |
| Total receipts (estimated for 1920)..... | 392.00   |

|                       |          |
|-----------------------|----------|
| Total receipts .....  | \$680.00 |
| Less total cost ..... | 613.84   |

|   |          |
|---|----------|
| Net return above total cost.....                            | \$ 66.16 |
| Estimated value of beeyard on Nov. 1, 1920.                 |          |
| 43 colonies of bees at \$15.00 per colony*..                | \$645.00 |
| Estimated value of supers, combs, and other equipment ..... | 200.00   |
|   | \$845.00 |

\*Ten of the original colonies were sold for \$15.00 per colony, so the figure is set for the lot.

### When Package Bees Should Arrive in the North.

In 1920 further tests with 90 packages were not **entirely** successful from the standpoint of crop production, but from our viewpoint they were quite productive of experimental data.

In order to get some information on the value of having the bees arrive early, we made arrangements to have the bees shipped in three lots; one lot to arrive Apr. 20, a second lot on Apr. 25, and a third lot May 1. We also attempted an experiment with 20 two-pound packages in comparison with three-pound packages, but this experiment was unproductive of real experimental data because of the cold weather which followed the arrival of this lot of bees. Thirty packages arrived on Apr. 20, but cold, cloudy weather greatly interfered with their getting started. Some half-dozen queens arrived dead, and others turned out to be drone-layers, so that it was impossible to make comparisons. The second lot, made up entirely of three-pound packages, arrived on Apr. 26, while the weather was still cold and after holding one day they were put

into hives with combs of honey. The cold weather again interfered with the bees' getting a start, and, as there were seven dead queens and 22 drone-layers in these first two lots, the only thing we were able to do was to unite many of the packages and thus break up any comparisons which we might have made as to crop production. The third lot of 30 packages arrived May 1; 15 were placed on foundation, and the others on combs of honey.

From the lot received on May 1, 10 packages placed on full sheets of foundation and given sugar syrup in Alexander feeders were disposed of to the young lady in the accompanying picture. A record of this yard is included.

At that time the temperature was high enough so that the bees were able to go to work at once building comb, and they built up in good condition. By the first of July they were so strong that it was impossible to prevent swarming in all cases, and one colony was greatly reduced by losing a swarm.

The total cost for this apiary including hives, supers, foundation, and 100 pounds of sugar was \$165.00.

More than 500 pounds of surplus was received, which was sold in two, five, and ten pound pails at 35 cents per pound, netting the producer an average of 32 to 33 cents per pound, or \$160.50. In addition, one 60-pound can including the cappings was preserved for home use. This record shows quite clearly what might have been secured from the other packages received on Apr. 20 and Apr. 26, if they had been delayed until May 1.

From this series of tests we have arrived at the following conclusions:

1. While package bees may be received in April with good success, the weather is likely to be too cold for the bees to build up, and there is great danger that the queens will arrive dead or that the cold will affect the queens so that they can only lay drone eggs. In other words, exposure to cold seems to destroy the power of the queen to lay fertile eggs.

- The loss of queens and the damage to others in our case are laid to the fact that the queen cages were hung too low, and that when the bees clustered the cages hung below the cluster and were exposed. The attendant bees in the cages were unable to keep the temperature high enough for the proper transportation of the queen.

2. Package bees should be received in Wisconsin about May 1 and not later than May 10 to be of value for the average season's honey flow.

3. Nothing less than two-pound packages should be secured.

4. Full drawn combs with honey and pollen are better than full sheets of foundation, but the bees should be fed sugar syrup for a few days when combs of honey are used.



## BEEKEEPING IN FOREIGN LANDS

### *Spring Dwindling in the Tropics Requeening and Other Things in the Dominican Republic*

By E. L. Sechrist

SOME good people think that every season is summer in the tropics and that bees gather honey every day. Sometimes that is true — then again it is not, and with a vengeance. For instance, you never saw bees so anxious to rob as they are here sometimes during the months of drouth, during the broodless period when the bees can fly every day, and must fly and carry water to evaporate in the hive to cool it. In some places water may be so far away that it is wise to bring it to the apiary to prevent undue wear and tear of the bees. The usual method is to carry water on the back of the patient burro in the ever useful empty gasoline tins in palm-leaf bags. Often a woman and child will be perched on top of all. If it were not for the burro and the Ford—the two conveyances of the common man, Dominican for the burro and Americano for the Ford—beekeeping would have troublous times in this country. The burros also draw the honey to market, either in tins, or in barrels, on a two-wheeled cart drawn by three burros or one mule and two burros. Occasionally there is an ox-cart.

#### The Winter Problem in the Tropics.

This continual flying of the bees during the "winter" season of August, September, October, and often part of November (especially if there has been a June and July drouth stopping brood-rearing early, so that colonies would go into "winter quarters" with few young bees) results in the "nicest" cases of spring dwindling you ever dreamed of. There may be left, when brood-rearing begins, quite a respectable number of bees in a hive and a good lot of

elsewhere, but the results are somewhat different. This is quite noticeable in the laying of the queen. Here, temperature does not often compel the bees

to keep the brood-nest compact, so often the queen may lay a patch of eggs in the outside of the outside comb as the place most free from intrusive honey. As usual, the incoming bees deposit the nectar in any empty cell in the first combs they find. As they are not compelled to move it from that spot in order to keep the brood-nest compact, only too often



Apiary "Sabalo" house is of palm and is palm-thatched.

it is left right there and sealed, and the queen lays wherever there is a vacant spot. Frequently there is brood to equal three or four frames scattered over ten, and often into the second story unless the queen is kept below by an excluder. A two-story brood-chamber would be very desirable, but the bees do not seem to know how to use it, not being compelled to use it as they do in the colder northland. The poor queen is at her wits' end to know where to put eggs. If an empty worker comb is put in the middle of the brood-nest, it is ten chances to one that the queen will be busy filling some few vacated cells in some other comb, and the pesky workers will fill that new comb full of honey before the queen discovers it. She is sometimes able to get some eggs into the bottom one or two inches of the comb, but often it is solid full of honey, and the bees do not move it—don't have to, so why should they? Foundation fares slightly better.

Never, anywhere, have I seen such a great loss of laying queens as in our apiaries here—I'm not quite sure why, but one reason is that queens are ordinarily reared in three-frame nuclei, thus resulting in small poor queens, of course.

#### Advantages of the Side-Nucleus.

I am using, with a good deal of pleasure, some "side-nuclei"; viz., a three-frame nucleus attached to the side of the regular hive, and with an auger hole entrance at the rear and a double zinc-covered auger



In a Dominican apiary.

brood will be started. Then the worn-out bees begin to die, and before enough young bees have emerged to replace the old ones, the colony may have dwindled to about a two-frame nucleus with more hatching brood than the bees can cover—poor, chilled youngsters hardly able to emerge.

#### Brood Scattered Thruout the Hives.

Bees follow the same program here as



hole connecting the nucleus with the mother hive. Here I can have a young laying queen ready to replace a lost one in the mother hive; or the whole three combs with bees and queens may be shifted to a new location to be built up into a full colony, while the returning old bees and others that will enter the empty side-nucleus thru the connecting zinc will care for new combs of sealed brood and a cell replacing the frames taken out to form the new colony. There is never any lack of bees to care for the brood in the side-nucleus and any surplus bees reared there can find their way into the main hive. In this way young queens may always be ready, so far as I can see without any loss to the working force of the apiary and with little disturbance of the producing colonies.

This side-nucleus may be examined without interfering with the mother colony, and if a young queen should be lost in her mating flight, there is no dwindling nucleus with laying workers; but the workers simply move into the main hive, a few staying there to care for the combs, even filling them with honey. Nor have I seen any of these nuclei robbed out, since they are defended as a part of the main colony.

This side-nucleus plan gets rid of another trouble we have with weak colonies or nuclei—the bothering by ants until they swarm out. In one apiary this spring (not ours) I saw 30 small colonies so pestered by ants that they swarmed out at the same time and tried to get into one single-story colony. It became a strong colony, to say the



A Dominican "barrile," used on the side as shown and the combs cut from half the length.

least, but two weeks later most of those bees had died and there was only a weak colony left.

#### In Poor Condition for Honey Flow.

So it isn't all play beekeeping in the tropics, and we must find how to manage those instincts or actions common to bees in all lands so that we may have the best results here. Ordinarily, not half the colonies are producing honey on account of some of these occurrences that throw them out of normal: A crowded brood-chamber and little brood; a poor queen or one missing at a critical time; a colony swarming because of being honey-bound or because young queens emerge after the old one is

lost; or colonies badly weakened by spring dwindling—yes, and how the moths do like to get into these two or three stories of combs that were the home of a big colony at the end of the honey season, but which later dwindled to a handful.

Why not remove those combs when the colony becomes weak? Very good, but to break the sealing of a hive, especially a



Side-nucleus especially advantageous during the robbing season.

weak one, during the robbing season, even if it is done in the evening almost at dark, will almost surely precipitate a robbing furor next morning, not only of the colonies handled, but also of every colony in the yard. Each will be thoroly investigated and no weak one will escape. It surely is the survival of the strong.

This "locality" business sometimes seems to be a bit of a joke; but, believe me, differing conditions do require adjusting of methods. Where bees fly and rob all "winter," one has a different problem from that where the good little bees keep their nicely packed hives at the proper temperature of 57 degrees all those chilly months. Some days I have longed for a big refrigerator, big enough to chuck in a whole apiary.

#### Crude Equipment Used by Natives.

These Dominican "barriles" are used lying on the side and not standing on end as is usual with log "gums." The new combs built in one end of the log are cut out annually or oftener and the honey pressed out, a considerable quantity of honey being obtained in that way. The drouths of the last few years in this region around Monte Cristi, have wiped out many of these native apiaries, also causing great loss among bees in modern hives, and many beekeepers are much discouraged.

Usually the apiarist and his family live in a small house near the honey-house—sometimes even in the honey-house; and their acquaintance with the bees becomes very intimate, especially at extracting time, when the little brown-skinned, nude youngsters become so honey-covered inside and out, and so disgusted with the occasional bee that becomes entangled in their curly, often kinky black hair, that the mother gathers her brood together and retreats to some neighbor's, where there are no bees, until the excitement is over,

Of course, during the extracting time, there is plenty of honey and cappings all around, and the near-by neighbors and their children come in and help a little, or get in the way and eat what honey they want and carry away a little in a bottle; but one is quite willing to have them do that, since it results in their almost never taking any honey from the hives, as might be expected. There little stealing here.

Our apiary houses and the houses in which the country people live are rather crude, often built of poles with small sticks interwoven and plastered with mud, and with a thatch roof of palm leaves. Some houses

are made from palm boards split from the outer shell of some of the palm trees, the inner part of the trunk being fibrous and unfit for use. These houses are more desirable than those of "wattle-and-daub" and sometimes have board floors, instead of the usual earth floor. Of course, we plan, some day, to have better equipment and cement stands for the hives (there are some now) instead of the wooden stands or the logs, which so soon are eaten up by the white ants (termites) that also work up into the hives and destroy many unless the bottoms are painted with creosote or carbolineum.

Monte Cristi, Dominican Republic, W. I.



THE general subject of the composition of the sweets is really of considerable interest, and, in spite of what you may think, it is not difficult to understand.

Do you know what honey is? Do you know what glucose is? Corn syrup? Invert sugar? Do you know the difference between cane and beet sugar? Have you encountered these new malt syrups which are trying to compete with honey? Do you know what they are? Do you know why glucose will not do for bee-feeding? Well, that is enough—I could go on, but my purpose is to answer questions rather than ask them. No—more than that. I want to make their answers self-evident. All our sweets are simply combinations of a very few fundamental components. Let me first then give you these fundamentals.

If a food is sweet it must have sugar in it, of course. But do you all know that there is more than one kind of sugar? I do not mean more than one source of sugar. I mean that there are different sugars, just as there are different varieties of grass in a meadow. All grass is somewhat green; all sugars are somewhat sweet, but not equally so. And there are other differences. Now the chemist can name 20 different sugars; but please don't worry, for I will stop at five, because there are only five sugars which are found in foods to any large extent. Try to remember the five when I give them. If you do, you have the key to the whole situation. Here they are:

No. 1 is **Sucrose**, S-u-c-r-o-s-e. It ought to remind you of s-u-g-a-r, ordinary sugar, because ordinary sugar is sucrose, I care not whether it be cane or beet.

No. 2 is **Lactose**. Does the word "lactose" suggest milk? It should. Lactose is only slightly sweet, so possibly you do not know that milk always contains a large amount

## HONEY IN THE SWEET FAMILY

### *Its Many Relatives and Just What Relation They Are to Each Other*

By E. Wynne Boyden

of it. About one-fourth of the solid matter in milk is lactose. It is not found elsewhere, and I mention it only for the sake of completeness.

No. 3 is **Maltose**, Malt-ose. It somehow savors of beer and malt products, doesn't it? Well, so it should, because maltose is sugar of beer. It is perfectly healthful, too, that is, the maltose is perfectly healthful. Possibly some of you prohibitionists think that maltose is a dead one, but not so. I assure you maltose is found in corn syrup as well as in beer, and there are still other sources.

Now I am ready to give No. 4 and No. 5, and I want you to pay especial attention to these last, for here we are coming close home.

No. 4 is **Dextrose**, and

No. 5 is **Levulose**. I name them together because they are usually found together. In honey, for instance, they share the honors about fifty-fifty.

Now I am wondering whether you remember these five sugars and can name them.

No. 1: Sucrose, cane or beet sugar.

No. 2: Lactose, milk sugar.

No. 3: Maltose, "beer" sugar.

No. 4: Dextrose } in honey and fruits.

No. 5: Levulose }

I must say a little more about **dextrose** and **levulose**. They are favorites of ours anyway, for what would honey be without them? Dextrose is also found in grapes; hence it is sometimes called **grape sugar**, a product of which I know you have heard. Furthermore, dextrose is found to a small extent in commercial glucose or corn syrup, hence it is sometimes known as **glucose**. This is unfortunate, because it leads to confusion; but we must accept the three names, and do our best to remember them.



Now, do you get the situation clearly? **Dextrose**, our No. 4 sugar, is sometimes known as **grape sugar**, and sometimes as **glucose**. But don't confuse it with commercial "glucose" or corn syrup, which has maltose and other constituents in it as well as dextrose.

Levulose, our No. 5 sugar, also has a few claims to distinction. I told you that it was found in honey. It is found in fruits as well. It is found in so many fruits, in fact, that some busybody decided to give it a new name, **fructose**. Remember that our No. 5 sugar, levulose, is also called **fructose**. Here is an interesting thing about levulose; it is the sweetest of the five sugars. It is fortunate for us that this is true, for if it were not for the levulose in honey, our favorite sweet would hardly deserve to be called a "sweet," as dextrose, the other honey sugar, is not very sweet. I would like to let each of you have some levulose for sweetening your coffee; but, at last quotation, the stuff cost \$50.00 a pound, and—well, I keep my supply in the safe.

#### Some Secrets of the Sugars.

I hope that you have not forgotten our five sugars. They constitute an interesting family, and furthermore, a chemist can tell you a few family secrets. Suppose, for instance, that we found two particles of dextrose—I said particles of dextrose, but I would like to say *molecules* of dextrose. A molecule is merely an extremely minute particle, you know. A molecule of sugar is the smallest possible unit that you can get and still have the sugar. If you try to go farther yet and break the molecule into pieces you get not sugar, but carbon, hydrogen, and oxygen. But I am disgressing. You know what a molecule is, I am sure, and, as I was saying, suppose we have found two molecules of **dextrose** in combination. What would we call the pair? Would we say that we had two molecules of dextrose? Not by any means; we would call the pair **one molecule of maltose**. Maltose? Why that is our No. 3 sugar! Do you see the point? The combination of two molecules of dextrose is called maltose. Suppose I had some maltose and wanted some dextrose. Could I split the maltose molecules in two, and have **dextrose**? Certainly; I will tell you how in a minute. But let me first make this matter of the union of the molecules a little clearer. Forget chemistry for a minute and imagine yourself in your apiary. You have before you two single-story hives. You want instead one double-story hive. Now, of course, you simply place one hive-body on top of the other. But when you get done you have an extra cover, do you not? In the same way when two molecules of sugar are united there is left over an "extra cover," so to speak. When two molecules of dextrose unite to form one molecule of maltose, this "extra cover" is a molecule of water. And when

we split the maltose molecule apart again we must give back this extra molecule of water or the whole business will fly to pieces. I am sure you understand—clumsy as has been my explanation. Now we can go a step farther—a beekeeper doesn't always stop with a two-story hive, and neither do we have to stop with two molecules of dextrose. Let us suppose we have not two but two hundred molecules of dextrose in combination. What would we call this conglomeration? We would call it starch, cornstarch, potato starch, or almost any kind of starch. Did you know before that starch is a mere conglomeration of dextrose molecules? Now could we break up one of these giant starch conglomerates? Yes, we can do it, and let me tell you how to go about it. Take some starch, boil it up with water to make a thick paste, and then add a trace of acid. The acid "coaxes" the conglomerate of dextrose molecules to fall apart, so we call it a "coaxer." The chemist would call it a **catalyst**. Now when we have boiled our starch paste for an hour or more with this trace of acid, we find that it has changed considerably—it has become sweet. The big conglomerate of dextrose molecules has broken down, but not completely. There are still some small groups unbroken. Here we find a bunch of about 40 dextrose molecules still hanging together. What is it called? It is not starch, and it is not dextrose, but we may call it dextrine. Dextrine is the gummy substances on the back of postage stamps.

#### What Relation Is Commercial Glucose?

About half of the original starch is left as dextrine; the remainder has broken down farther, and so we find a number of groups of two dextrose molecules, this being the maltose. The rest has gone completely to single molecules, and is dextrose. Thus we have a mixture of about one-half dextrine, one-fourth maltose, and one-fourth dextrose. What shall we call this product? It is none other than our former acquaintance, commercial "glucose," or corn syrup. Did you think that corn syrup as made is a concentrated extract of the sweetness of the corn-stalk? Banish the idea. Corn syrup is made from starch, usually cornstarch, and that is the only reason it is called corn syrup. Potato starch would do as well.

Now why is it that commercial corn syrup or glucose is impossible as a bee-feed? Simply because of the dextrine, the gummy substance, which is in it. Bees cannot digest dextrine. This also explains why honeydew honeys are poor for wintering—they contain rather large amounts of dextrine, while normal honey has less than one per cent. Note that I did not condemn dextrine as a food for human beings; dextrine is perfectly good food for us. And thus on these grounds, we cannot condemn corn syrup or glucose as a food product. I do not say that corn syrup is a perfect food, but I see no



fault in it that cane or beet sugar does not possess. Let us give credit where credit is due. Later on, I can show you why honey is a better food.

Well, you see that I have told you a family secret of the sugar family; you see the relationship between dextrose and maltose and dextrine and starch. You know that maltose is merely a combination of two molecules of dextrose minus a molecule of water, that dextrine is merely a combination of 30 or 40 dextrose molecules minus the same number of molecules of water, and that starch is merely a combination of about 200 dextrose molecules minus the same number of molecules of water. Also, you see that we can take the larger aggregates and break them down, thus getting sugar from starch. But do not think that we can as easily reverse the process, and build up a conglomerate. That is almost out of the question.

### Honey's Near Relative.

There is just one more family secret, I must reveal to you. Let us take, this time, one molecule of dextrose and one molecule of levulose and imagine them to combine, with the customary loss of a molecule of water in the process. Note that I did not say that I could combine these two molecules—in fact, no one has ever succeeded in doing it—but let us imagine that they are combined. What have we? We have one molecule of sucrose, our No. 1 sugar, which is ordinary cane or beet sugar. Now we are able to break this molecule in two, and obtain one molecule each of dextrose and levulose. Just a little acid and hot water will do the trick. What shall we call the product, which consists of equal parts of dextrose and levulose? It is the well-known **invert sugar**. Perhaps some of you may think that invert sugar is about the same as honey, since both are composed mainly of dextrose and levulose in equal proportions. **About** the same they are, but not by any means identical. And this brings me to a discussion of the merits of honey.

### Why Honey Excels Other Sweets.

You already know that honey is a mixture of dextrose and levulose in nearly equal proportions. In addition, honey contains a small amount less than eight per cent of sucrose, ordinary sugar. These three sugars, with about 17 per cent of water, constitute more than 9/10 of honey. But the remainder, small as it is, is nevertheless highly important, and serves to lift honey above the other sweets in food value.

What is the remainder? First, there is mineral matter; every mineral in the human body is present in honey. Of course, we need mineral matter in our food, and we need more than the present generation usually gets. We need calcium and phosphorus for our bones and teeth, and iron, sodium, potassium, calcium, etc., in the blood; not to mention many others required

by various organs of the body. Common sense would tell us if science did not, that what mineral matter we get we must get in our food. And yet, what do we do to our food products? We refine them so much that they are greatly demineralized. I am not an alarmist, but I stand ready to prove that we have reached a danger point in this elimination of minerals from our foods. Consider, for instance, white granulated sugar. It is 99.9 per cent pure sucrose if it is cane sugar; beet sugar differs only in that it is about 99.6 per cent pure sucrose. Where is there any room for voluble mineral salts? We must concede that the great fault of ordinary granulated sugar is its purity, strange as it may sound. Brown sugars have some ash, and are therefore better, altho the assortment of minerals is far from perfect. Old-fashioned cane syrup is very much ahead of refined sugar in this respect, and so is maple syrup, which, I might remark, is composed of sucrose with a small percentage of mineral salts and organic substance. These last give maple syrup its flavor, and incidentally make it more healthful. However, maple syrup and cane syrup are all too rare and ordinary sugar is conspicuously lacking in this matter of mineral salts. What about molasses? This product has too much ash, strange as that may seem. The ash is, however, mostly the lime that was added during the sugar refining. Present-day molasses is not a very wholesome food product. Corn syrup and glucose have a little mineral matter, but unfortunately it is mostly common salt, introduced in the process of manufacture, and common salt is never lacking anyway. Thus we see that honey stands alone in this highly important phase of food value.

There is one other respect in which honey excels, and those of you who have been reading "Gleanings in Bee Culture" will know to what I refer. It is in regard to the vitamins in honey. It has recently been proved by scientific research that honey does contain vitamins, especially comb honey. I will not take time to tell you about vitamins; everybody is hearing about them nowadays, and everybody has come to realize that they are essential to life and health. But, as in the case of mineral salts, refined foods are apt to be lacking in vitamins. Even heat will often destroy them, and it is partly for this reason that none of the commercial sweets except honey contain them.

Thus we see that there are at least two respects in which honey clearly excels all the other sweets. There are many little details I could give you which would increase your appreciation of honey, but this discourse has undoubtedly lasted long enough already, and I will close by urging you to study all the sweets in order that you may have a clearer understanding of the merits of each one.



## MAKING OF HONEY A STAPLE

### Importance of Advertising Backed up by a Constant Supply

Notwithstanding the price-fixing and all other attempts to stabilize the prices of food materials, just how well the Government succeeded and how the prices flew skyward when Government control was removed, is an old story. Now the reaction is on, and it is very hard to say how low the prices will go. It is, however, a matter of great importance to the honey producer to keep the advantage gained during war time.

As with other foods, the price of honey is bound to fall; but what difference does it make if the relative price-ratio and demand can be held? The honey producer can do but little to maintain the ratio, so it is on creating a larger demand that he must rely for his future.

During the war period the publicity given by the Bureau of Entomology at Washington and the States Relation Service gave to the use of honey an impetus that must not only be maintained, but augmented. How to do this is now the producers' most vital problem. A study of the manner in which other commodities have been made popular is of intense value. The same devices used by the growers of oranges, prunes, raisins, or walnuts will do the same for honey as they have done for these articles. The devices can be included under the following heads: Marketing associations, advertising, and a constant and easily accessible supply. To have all the publicity possible and have a honey advertisement as familiar as that of Camel cigarettes, and not have honey where the buyer can get it will never create a trade. A housewife sees an advertisement and telephones her grocer the order for honey. She is pleased with her purchase and a month later repeats the order. The grocer informs her no honey can be had, and she substitutes a corn syrup. A sale of honey is lost, and a constant customer becomes the patron of some syrup company because of their attractive advertisement, neat package, and ability to deliver the goods. As centrally located as is St. Louis, Mo., there were only a few stores where honey could be purchased during the summer of 1920.

If a constant and accessible supply then is the keynote of the question, how can it be obtained? The answer can again be taken from the great fruit firms, a nation-wide marketing association. In such hands, advertising of a widespread and efficient character is possible at the least expense to the marketing association. These advertisements must be written and placed so as to at-

tract the housewife. The advertisements should appear in magazines and papers devoted to the home. At the same time, these papers should receive popular articles on bees and honey from the proper representatives of the marketing association. These advertisements, however, should not be as lavish as those of some firms, as the housewife is the prince of economists, and she argues that, if the association can afford such a high-priced display, there is an immense profit in honey, and she will look for cheaper sweets. There can be but little doubt that a popular magazine article on bees is one of the best salesmen; and, if this is backed by an ad showing where honey can be bought and a constant supply be on hand, you have a regular customer.

A national marketing association's first and greatest problem is to control the supply. It means that, from California to Maine and Florida to Washington, Mexico and Canada included, the beemen thru their representatives must pool their issues and allow the central officers so to direct the sale of honey that no lack of honey exists on the market. Not only must they supply regularly the established trade, but they must make it possible for stores to handle honey as they do other standard goods.

The American Honey Producers' League, which was inaugurated last winter, plans to do just this kind of work. Based as it is on the experience of the Colorado, California, Texas, and other state associations and backed by a majority of the beekeepers of the honey-producing States, this league can and will solve these problems.

College Station, Tex.

H. B. Parks.

## UNDUE SWARMING IN ENGLAND

### How the Character of the Honey Flow Influences Swarming

On reviewing the peculiarities of the present disastrous honey season three points are prominent: (1) The entire absence of a normal spring flow; (2) a long and heavy swarming season; and (3) scarcity of autumn stores for wintering. Without doubt 1920 has produced the scantiest honey crop for some years; and, in fact, in most localities it has been a total failure. During the period of fruit blossom the weather was more or less cool and windy, and instead of the usual surplus of honey from beans, sycamore, raspberry, etc., many colonies had to be fed in order to avoid a check in brood-raising.

Altho prospects for the main honey flow were fairly bright, the midday tempera-



## FROM THE FIELD OF EXPERIENCE

ture was too low, and the nights were too cool for clover to yield any appreciable amount of honey, and but little work was done in supers.

To the light interrupted flow during June and the drenching July, with one-half day in three fair to fine, must be laid the cause of the tremendous swarming reported by all beekeepers this summer. It is well known that during a hot summer, if near fields of white Dutch clover, sainfoin, or lime groves, strong colonies will fill super after super without attempting to swarm more than perhaps once. But this year, when prevented from working in the fields, bees developed instead the swarming fever. Many swarmed four to six times; indeed, the number of swarms which flew away must be very large because far more issued than the beekeepers had hives for or were able to deal with properly. Skeppists had more swarms and casts than they had straw skeps to place them in, and in one village I am acquainted with, the bee stock in the church tower threw so many swarms that practically every one from the postman downwards finished up with a stock in his garden. No surplus could possibly be stored after such excessive swarming. Strong colonies became weak, and the brood-combs were practically empty of stores. Several cases of starvation were noticed in August. Feeding has therefore had to be carried out on a large scale, 15 to 20 pounds of sugar being required by practically all stocks to carry them over till April next. Generally three or four light stocks were united to

form one strong colony before feeding was proceeded with.

The failure of the honey crop added many difficulties to the work of the queen-breeder. In my own apiary nuclei were found to be in constant danger of starvation because, altho strong in bees, they were not able to forage and thus become self-supporting. Queen-mating was also restricted and uncertain. In ordinary seasons nuclei should be able to produce two queens per month for June, July, and August; but, owing to the abnormal length of time taken between the dates of emerging and mating of queens, not more than two queens every six weeks could be removed, whilst the number lost was rather higher than usual. The restricted mating weather resulted in a fair percentage of pure matings from drones bred in the apiary; but, on the other hand, the cool summer temperature had the effect of darkening the color of queens bred from light Italian stock. Light queens are never so bright as when raised during hot weather while a flow is in progress.

The net result of the season is that comb honey is almost unknown, and extracted honey, tho fair in quality, is exceedingly short. The country is well stocked with bees, and disease appears to be rather on the decline. As sugar stores are not so safe a winter food as honey, wintering cannot be up to the average. Strong stocks formed by mating weak lots together are likely to winter in fair shape. Weak stocks are almost sure to die out, and a heavy loss in this direction is more than likely.

Cheltenham, England.

A. H. Bowen.



Mr. Admire's apiary, shaded by castor bean plants, with the lower leaves trimmed away.



## FROM THE FIELD OF EXPERIENCE

### AN ARTISTIC NATURAL SHADE

#### Inexpensive Method of Shading Bees When Shade is Most Needed

I own a tract of land containing about two acres. On these two acres I keep my wife and seven children, rather a small family for such a large farm. On this same plot I also have from 25 to 50 chickens and raise plenty of vegetables for the family, with quite a few to sell. Most of the ground outside of the chicken park and where the house stands is planted to some kind of vegetables. On this two-acre tract and located nearly in the center of the garden are 40 families of bees.

When I thought of placing my bees out in the garden among the vegetables the first thing was to provide some kind of shade. I finally thought it would do a double duty to plant castor beans, as they would provide shade for the bees and keep the moles from rooting the ground all up. At least Grandma used to say if you planted castor beans in the garden moles wouldn't bother. Well, I found this wasn't true. There were two or three moles that just seemed to delight in staying right in among those hives all summer. Maybe the reason was that they liked the bees better than the beans, but any way I am not going to be so sure about what Grandma says hereafter.

As for the shade I don't think you could find anything nicer and more efficient. The picture where you can hardly see the hives because of the beans was taken July 2, and the others were taken September 1. As the beans grow I trim out the leaves under-

neath, and by the hottest part of the season the plants are tall enough to let plenty of air thru and they have a nice umbrella-like foliage, so they make an ideal shade. There is another feature that is worth something to me, and that is that, if you use a little judgment in planting, you will add greatly to the beauty of your yard and in my case to the garden. The bees seem to be well pleased with their surroundings, and it seemed as tho some of them tried to keep the top of their house above the top of the beans; but, after some had erected seven stories above the ground floor, material seemed to get scarce, and, as the beans were gaining on them all the time, they gave up in despair. I had a hive with seven comb-honey supers on just coming up to the first limbs of the shade, so trimmed as to make the height right. Some of these beans got 10 feet high and 6½ inches thru at the ground. It made a regular grove for the bees. I had beemen from all over our part of the country come to see them. I live right on one of the main highways thru Nebraska, and this yard certainly attracted the attention of lots of passers-by.

To sum it all up, the castor bean comes up in the spring and does not bother when the bees need all the sunshine and warmth they can get. As the weather grows warmer, the beans come on and make the necessary shade. Then in the fall when the bees need the sun again the beans are killed by frost and cut and taken out of the way. And for the amount of trouble taking care of them, I don't believe there is any kind of an arrangement that will equal them.

Auburn, Nebr.

J. W. Admire.



Here are the castor bean plants before being trimmed, early in July. The shade is abundant.

## FROM THE FIELD OF EXPERIENCE

### THE BEDELL CAPPING PRESS

#### An Extensive Producer Favors Pressing the Cappings

During a course of lectures for commercial beekeepers given at Cornell University it was my good fortune to meet O. W. Bedell of Earlsville, N. Y. He there put before me a press devised by him, to press the honey out of the cappings, which have been cut from the extracting combs. He also showed me a sample of the cappings after pressing. I was so impressed with the process that I wrote an article for the July number of *Gleanings* for 1919, giving illustrations describing the machine and how to use it. From the number of inquiries which have been received from readers of *Gleanings*, I know that Mr. Bedell's press has made a wide and favorable impression. The accompanying illustration shows the machine in use. It has proved all that I expected it would. Two men can uncap at this machine, and at the same time a "cheese" can be in the process of pressing.

One of the cheeses will be seen turned on its side with the point of a honey knife embedded in it, showing its solid nature.

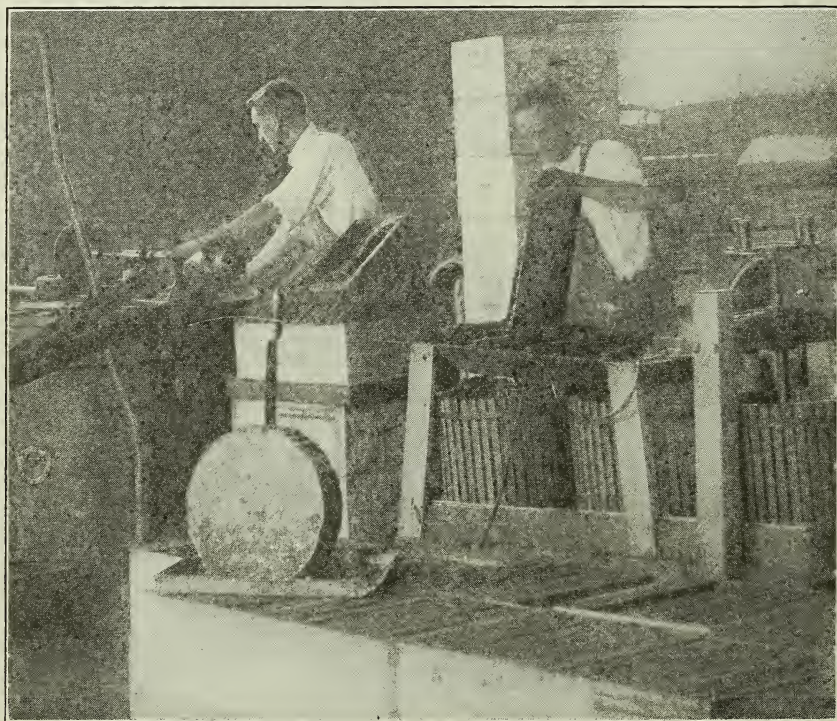
So well had the honey been pressed out of the cappings that, altho half a dozen of these cheeses were piled on a sheet of paper for several days, practically no honey ran from them. There is no question about the thorough success of this method of removing the honey from the cappings, and it has given probably 1,000 pounds of honey in its best condition for immediate sale.

When I secured this extracting-house we secured the best facilities we ever had for extracting. It has water, sewage, and gas connection. We can run our truck right into the building. As the honey is extracted, it is warmed, by means of the gas.

The building (formerly a church) has room to carry on all operations and store 10,000 extracting supers. We were told the robber bees would drive us out, and as the building is on the main street of the town robbing would have been serious. Particularly dangerous was the situation as the honey was buckwheat; but no disturbance was created, and some 15,000 pounds of buckwheat honey was extracted and filled into tins without inconveniencing anyone. A little crude carbolic acid was used about the entrance door.

R. F. Holtermann.

Brantford, Can.



The Bedell capping press in operation.



I BELIEVE there are a good many beekeepers who would look just as good-natured as W. J. Harvey does on page 743, December Gleanings, if they could produce 908 pounds of honey from one colony, or an average of 360 pounds for four years from their entire yard.

\* \* \*

That old term "quiescence," page 714, is a most decidedly good one and should be in more common use than it has been, for it sums up in one word the problem of successful wintering.

\* \* \*

That was a right good article, by Penn G. Snyder, on "Beekeeping in Porto Rico." For one I have often wished to know the conditions in Porto Rico, and the facts he gives just satisfies my curiosity. It was almost as good as a visit to the island. I am glad we are to hear from other far-away lands.

\* \* \*

The editorial on page 713 says, "The danger of the entrance being closed by dead bees and the condensation of moisture within the hive are both greatly reduced by winter protection." Quite true, but the danger of entrances getting closed is greatly increased by a poor quality of winter stores.

\* \* \*

The report referred to by H. B. Parks, page 739, and taken from a bulletin of the Colorado Agricultural Station, by Dr. Walter G. Sackett, on the danger of contracting bacterial diseases from the use of honey, shows the danger to be less than has sometimes been supposed—much less, in fact, than from "water, milk, or other substances of high water content." The fact that the bacteria Dr. Sackett tested could live only from two to four days in extracted honey shows that it is very difficult, if not impossible, to contract any of those diseases from honey.

\* \* \*

I had planned for some time to say, in January Gleanings, something about the "Production of Comb Honey," but I see the new editor has got the start of me. However, notwithstanding my timid nature, I believe I will not be frightened out of what I intended to say. All Mr. Demuth has said is quite true, but there are some things he has not said. The price of supplies for comb honey at the present time makes its production seem rather unattractive. The price of sections, foundation, cartons, shipping-cases, and crates will be somewhere

## SIFTINGS

J. E. Crane

from seven to ten cents for each section to start with; and then the work of making all the sections, putting in starters, setting up shipping cases, cleaning,

and weighing each section, and then making crates, and packing will be no small task—to say nothing of the extra work of caring for yards run for comb honey. We have produced comb honey in the past and shall doubtless continue to do so in the future, but the high prices of supplies have set us to thinking "right smart."

\* \* \*

That new apicultural building of the Ontario Agricultural College at Guelph, Ontario, illustrated on page 725, is most creditable to the enterprise and good sense of our Canadian brethren. We think the beekeeping interests of the country move slowly, but it almost takes away our breath when we stop to think how few years it has been since an agricultural college first made beekeeping a part of its regular course, or since buildings adapted to this work were erected. Certainly the beekeeping interests of the country never looked more hopeful or more promising than today.

\* \* \*

J. L. Byer, on page 741, writes of finding two queens in one hive. This certainly sometimes happens, as also that bees remove an egg from one comb to another. I have met with both these facts in my experience. This shows very conclusively that nature's rules are subject to exceptions, or rather, perhaps I should say, that in every generation of plant or animal life there is more or less variation. We are not apt to notice slight changes, but large ones we do notice. Some of our choicest fruits and flowers and our finest domestic animals and plants come in just this way. Notice what a sensation that precocious youngster, "annual sweet clover," is producing in the world today.

\* \* \*

On page 730, W. E. Joer tells us how he would maintain good prices by judiciously distributing honey and advertising. His plan seems not only legitimate but feasible. It is only as honey is brought to the attention of consumers that we can expect them to buy and use it. He proposes that the American Honey Producers' League assess its members one or two cents for each hive owned by members. Two or three things seem evident. A large amount of money is needed for advertising. Very few beekeepers are likely to advertise on their own account. There is not likely to be any better organization of beekeepers for this purpose than the American Honey Producers' League,

**A**FTER the articles on Vitamines in the September and October issues a cautious adviser expressed the fear that I might be going too deeply into a subject which most of the readers could not understand and in which they lacked interest. If the number of letters from subscribers are a measure of an article's popularity, then I have no doubt as to the advisability of discussing vitamines. Only one of my other subjects has brought so many letters, and some of these letters make me feel dubious for fear my little articles are not scientific enough for the very intelligent readers of *Gleanings*. A number of letters have come from the various state agricultural experiment stations, which leads me to hope that further feeding experiments may be conducted by scientific investigators who are themselves interested in bee culture and the production of honey. There is much yet to learn about vitamines in honey.

A year ago last summer, before any research work had been done by Prof. Hawk on honey, I learned what I ought to have known before, that there is more or less pollen dust in honey. Thereupon I advanced the theory that there might be the fat-soluble vitamin in honey, for it seemed reasonable to me to assume that it would be in the pollen, a natural food for the bees. But my husband, my son, who is an enthusiastic undergraduate chemist, my brother, and the consulting chemist of our company rather squelched me. Possibly they thought the amount of pollen dust was too minute to be considered; they hated to admit that pollen dust was in honey at all, or they did not think pollen likely to contain the fat-soluble vitamin.

Later, when Prof. Hawk found distinct amounts of the fat-soluble vitamin in comb honey I still secretly believed it might be due to the pollen in the honey. As I have said before, it is unreasonable to suppose that Nature would waste such a valuable food constituent in the container of the food. And now comes a letter from R. F. Holtermann of Canada, who is both a well-informed and practical beekeeper, with the same theory, and altho we may both be wrong I will quote briefly from his letter:

"In reference to vitamines in comb or extracted honey, will you allow me to make a guess? It is that the vitamines will be found in the pollen, and that there will be found as many and more of them in pollen as in any available food. More—the time may come when pollen in nice new comb will be in great demand where health would indicate the advisability of such."

A few days ago I received an S. O. S.

## OUR FOOD PAGE

CONSTANCE ROOT BOYDEN  
(Stancy Puerden)

there were distinct amounts of vitamines in comb honey. The firm wrote back: "The information in your letter is interesting, but what are vitamines?"

But the fame of vitamines is rapidly spreading, as the following quotation from the December number of a popular women's magazine will prove: "As for the detective, he should be as inscrutable as a vitamin."

**S**OME of you who were interested in the articles, "An Hour With Luther Burbank" and "More About Luther Burbank" last summer may recall that Mr. Burbank promised me a box of spineless cactus fruit in the fall and two of the wonderful, fast-growing walnut trees, and perhaps you wondered at the time if he would remember his promise. You know many of us nowadays excuse ourselves for our failure to answer letters and attend to other duties on the ground that we are so busy that we simply cannot do everything. Mr. Burbank impressed me as the busiest man I ever met, and I know some frightfully busy ones, including the man nearest related to me; but this quotation from Mr. Burbank's letter of Nov. 4 illustrates how this busiest of men remembers his promises, and I had not written him a word to remind him either: "We will send the two walnut trees promised as soon as we can dig and pack them."

And a further quotation as to the fruit is: "I am sending a box of eight or ten varieties of the cactus fruit, tho we could not, of course, send the thin-skinned, tender, most delicious ones, as they are too soft and some of them ripen much earlier than these, and some much later, in fact, all the fall and winter. You will notice that for most of these the big seeds have been reduced to the size of tomato seeds, and you will notice the varied flavors of the different ones, even tho picked before they were quite ripe. \* \* \* I have now 600 varieties of every flavor, color, form, and size that the imagination could well suggest."

Mr. Burbank at the same time sent a box of the fruit to my father in Bradentown, Fla.; but like the enthusiastic, eighty-year-old boy that he is, father prolonged the pleasures of his automobile trip to that place by going out of his way and did not reach there until the day before Thanksgiving. I imagine therefore that the fruit was spoiled before he saw it.

My box followed the letter within a few days and was in very good condition. How I wish I could have treated every one of you

call from a distracted young office man. In his enthusiasm for honey he had written a wholesale grocery firm that it had recently been demonstrated that



to a sight of it and also a slice. Each fruit was wrapped in tissue paper and packed in fine sawdust. They were smooth-skinned, varying in color from pale green thru green flushed delicately with rose, yellow, amber, salmon rose to some that were a beautiful, clear dark red, just the shade of a Jacqueminot rose. They were exquisite, and, unlike many other beautifully colored fruits, the flesh was intensely and evenly colored clear thru; in fact, the coloring was richer in the flesh than in the skin.

I believe I tried to tell you something about the taste of the cactus fruits after eating those in Santa Rosa last February, but Mr. Burbank explained that they were not ripe at the time, and that was why he wished us to taste them in the fall. Being unripe they did not show the gorgeous colorings at that time either.

The very deep red ones evidently are more delicate than the others, for two were a soft mass and quite spoiled when they arrived; but one was just dead-ripe, juicy, rich-flavored, and luscious. It was so beautiful I couldn't bear to eat it, but so tempting-looking I couldn't help it.

While there were differences in the flavors of the various colored fruits all the ripe ones were fine, and some that were unripe became mellow and sweet after a few days. To some people the flavor of these cactus fruits suggests the banana, the pineapple, or the apricot, or perhaps a blend of all of them. To me it is more like a fine muskmelon or the so-called honeydew melon at its best. Strange to say, when the fact that they will grow in a desert is taken into consideration, all the cactus fruits are very juicy. A plate of the sliced fruit, thoroughly chilled on ice, would be tempting indeed on a hot summer day, and as beautiful as a bowl of flowers.

They would undoubtedly be delicious in fruit salads, sliced and served with cream like peaches, and on account of their rich and varied colors would be very attractive in preserves or conserves, sherbets and ices, tapioca and gelatine puddings.

Maybe you think I am over-enthusiastic about this fruit *Opuntia*, if we give it its correct name. I don't mean to convey the idea that it is more delicious than many of the better-known fruits, but I think it is just as good, quite as beautiful, and it will grow and produce food, drink, and forage abundantly on poor soil with practically no cultivation, and if left undisturbed will increase constantly in size. It represents more than 16 years of hard, painstaking work and study on Mr. Burbank's part.

If we of the human race learned our lessons under the Great Teacher as well as the desert cactus learned under its teacher, Mr. Burbank, lost the thorns of our characters, and so lived that our lives would produce abundant and valuable fruits amid discouraging environments, this world would be a happy place for all, wouldn't it?

**F**AST-GROWING walnut trees which are grown for their beauty, both as trees and in the form of lumber, may not belong on a food page, but they are going to have a little place on this one not only this month, but in the future, if they behave as they should and grow.

Last May I told about seeing the large walnut tree which had attained in nine years a wonderful growth. I said then four years, but corrected it in a later issue after Mr. Burbank corrected me. The name of that variety was the "Paradox." I have wondered since if Mr. Burbank heard the tenth commandment crack as I stood looking at that beautiful tree, which looked as if it might be fifty years old instead of nine. Whether he did or not, he later promised me one of them together with a "Royal," which is an equally beautiful and quick-growing walnut and hardy enough to stand our climate.

After Mr. Burbank's letter came I lay awake nights worrying for fear I could not find a man to help me plant them, for our boys are away at school, their father was just about to leave for some weeks on a business trip, and even unskilled garden help is almost impossible to obtain in our vicinity. To tell the truth, while I have never been tempted to exchange my husband for any other man, not even a garden lover, sometimes, as in this particular instance, I have wished the marriage service had read this way, "I promise to love and cherish her and spade her flower beds."

The trees finally came the day before Thanksgiving, one of our kind friends found another who knew all about setting out trees, and now the baby trees are safely planted, cuddled in warm straw blankets and protected by strong stakes. Maybe when the gentleman comes home and sees the location of the "Royal" it will be a lesson to him to stay at home and look after his wilful wife, for it is where she wanted it and not where he advised her to put it. It stands in the middle of a large, open space in the lawn where it will eventually shade the porch; that is, it will in a very few years if it grows according to schedule. If it does not then I shall have to tell that husband of mine that I am sorry I did not obey him and put the tree in a less conspicuous place. The less hardy tree, the Paradox, is planted where the man of the house suggested. The buds on that one looked green and swollen when it came. I hope the infant tree will not make a fatal mistake and attempt to grow before our winter is over.

If those walnut trees live and if I live—as a Gleanings correspondent—you will probably be informed of their condition at least once a year, altho it would be humiliating to have to admit their untimely death, or worse yet, failure to make the expected growth. Just possibly they will deserve being photographed for this page in the future.

**B**EFORE making my plea this first month of the new year for the advantages of beekeeping as a sideline, let me insist first on the importance of sidelines themselves.

When a man's chief work has been chosen under a flaming inner compulsion, as the one thing in the whole world he wants to do, then perhaps he scarcely requires a sideline, unless, indeed, for health's sake. Possibly a vocation worthy of the name, in its rich primitive sense of a calling, a bidding, an invitation, leaves no room in one's heart for an avocation that calls one away. Probably sidelines, avocations, are of modern growth, born of commercialism and a strangely unyielding economic system that no one understands well enough to improve. But true it is that today countless men speak of their work as a grind, a monotonous routine, a strain. And they plan instinctively and wisely to temper it with golf, to balance it with hunting and fishing, to forget its grim unloveliness in a garden. Often, even those who love their work also love to play.

So an increasing number of men are setting themselves deliberately to some interest or game completely apart from their daily work. Of all such, surely those of the great outdoors are most to be desired for business and professional men. To a man or woman who has been for many hours of many days shut in behind brick walls, golf or gardening or beekeeping will be of more benefit and probably bring keener delight than chess or wood carving or the collecting of etchings.

The sideline activity worthy to stand quite at the head of the list must call its follower out into God's sunshine, not force him into storms and disagreeable weather; it must exercise his muscles without straining them; it must be baffling enough to drive him to books and journals, tho not heavy enough to force him into long hours of difficult study; it must tempt him to a constantly increasing skill, without requiring too long practice or too wearisome toil; and it must cast its spell over his very soul, until there shall awaken within a new enthusiasm, a new wonder and a great love. And for most of mankind, if a sideline thus bring charm and challenge, pleasure and books and health, it will be pursued with a double zest if in the other hand it brings a profit that can be reckoned in dollars and cents.

Outside of a garden, then, where is there to be found a sideline so desirable as beekeeping? I say outside of a garden, because something in my heart makes me say it—God does so surely walk in gardens in the

## Beekeeping as a Side Line

— Grace Allen

cool of the day—in all other places, too, and at all other times. But, oh, especially in gardens do we see and feel Him, and especially in the cool of the

day. Do you remember how Alfred Noyes says it?

"In the cool of the evening, when the sky is an old story

Slowly dying, but remembered, ay, and loved with passion still,

Hush! . . . the fringes of His garment, in the fading golden glory,

Softly rustling as He cometh o'er the far green hill."

But where is there anything lovelier to add to a garden than a few hives of bees, painted white and set among the roses, and hollyhocks and daffodils, or under young fruit trees or where the lilacs bloom?

Take first the mere matter of weather. A man goes faithfully forth to his regular work, no matter how hard the winds blow or the storms howl, no matter how biting the cold or how pelting the rain. But when he leaves his real work for a sideline interest, then he appreciates being able to avoid "winter and rough weather." See, then, how nicely beekeeping links itself with only pleasant days. Even during the spring and summer the bees are to be left alone in bad weather. And the last work done in the bee yard, or the "bee garden," as Gilbert White more gracefully says, in the blue-gold days of October while the bees are still flying to the fields bringing in their last fall nectar, is to see that each hive is heavy with a wealth of sealed stores, and that all its conditions are right as to numbers and room and general prosperity, to carry it without further attention on thru the winter and the long unpredictable spring. Some beekeepers then carry the hives into a cellar, some put them into large cases and pack them around with thick warm layers of leaves or chaff, while others let them stay where they are. Then they leave them alone, and the outside bee work is finished for that year. No going out into the biting, bitter days of winter. How shiveringly I remember the winter work when chickens were my sideline!—bundling up to carry out boiling water to thaw out drinking vessels frozen solid, getting chilled and cold. The only work a beekeeper does in winter is to sit by his fire, reading bee books and journals, to make his plans for the next season, and in his shop, or kitchen perhaps, to put new hives together. And eat his honey!

Those who have never kept bees may wonder that so simple an occupation should require any study. They know people who keep bees, and have kept them for years, and they are quite sure—and oh, they are right about it, too!—that these people are



entirely innocent of reading or study or research. Beekeeping is not really a sideline with such people, it doesn't get them anywhere; it is just a sort of accident, a happen-so, really a regrettable delay on the road to progress. There the bees are. That's all. Often there are swarms; occasionally there is honey. When a swarm comes out the deluded keeper and his wife and his children and his servants come running with bells that they ring most gayly and pans that they beat most frantically, all unaware that the beekeeping fraternity is smiling at them for thus keeping alive a queer silly old tradition, "Better keep bees better or better not keep bees," as the popular slogan puts it.

The real sideline beekeeper who has studied and read has perhaps clipped off the wing of his queen bee so that she cannot fly, because he knows the swarm will never go away without her. Or, his wits sharpened by reading of the efforts and successes of others, he pits them against the bees' instincts, and keeps them from even wanting to swarm. He has studied the habits and behavior of the mysterious multitude that inhabit his correct modern hive, and he is learning all he can of their ways and their needs and what they will likely do when things are thus and so.

He has made the acquaintance of the nectar-bearing flora of his locality, and the time of its blooming. In February and early March the first swelling high in the elms and maples is to him as a message, and he looks to see his busy workers come drifting in with great loads of pollen. The dandelion means huge balls of precious yellow dust, rich in food elements for the baby bees being reared in the awakened hives. Blossomed apple trees and plums thrill him with the vibrating hum of his bees as they plunder and bless. He knows what disaster may come, and how to ward it off, when the unsubdued winter turns fiercely back to drive the spring into some hiding place that only the south wind knows. With new and more seeing eyes he watches the clover fields come into bloom. Basswood and poplar he counts as friends, and he thanks the hills for the sourwood tree. What were once to him but unnoticed weeds become heartsease and Spanish needle, and in the autumn he calls the wild aster by name.

He opens his hives, and what he sees that is not good he sets about to remedy. He recognizes disease and knows what men of science say to do. Where there is no queen he can give one so skillfully that even an inhospitable people accept her as their own and will die to defend her. If he would have more colonies, he knows how to set about starting new ones. He is aware of the ebb and flow of the nectar and adjusts his storage space accordingly. He takes a maximum of honey from his hives, and leaves a maximum therein for his bees. He meets the challenge of the hive with a wisdom and

skill born of the experience of others whom he knows only thru the printed page.

As for the charm of it, think of coming from the office or bank, the factory or store or courtroom, from the noise and crowd and perplexities and the soul-wearying strain of it all, to some quiet spot where white hives are ranged along green grass under cherry trees or grapevines, where a mocking bird pours out its miracle of song across the sunlight and all around is the humming of bees. There is nothing like it in the whole world for the healing of one's soul.

If, after the first resting and enjoyment, he starts work—what work it is! He blows a bit of smoke into the entrance of a hive, removes the cover gently and draws out a comb of bees. And behold he is face to face with the very heart of the hive and its hidden workings. The comb may be newly built, white and waxy and fragile, or it may be old and dark and strong, reinforced with uncounted layers of almost invisible cocoons. It may be filled thru all its rows of six-sided cells with fragrant ripening nectar, or the rich, fully ripened honey may be sealed from sight under its silver covers; it may have eggs like tiny ivory specks in the polished cells, or wee white larvae waiting to be fed by the faithful nurses; or the cells and their occupants may be covered over, as with coarse fibrous blankets, hiding the age-old marvel of metamorphosis. There wings are forming that shall fly with eager strength across the light of summer days to come. There in the darkness each pupa is growing its three single eyes and two strange compound ones, that shall some day guide it with swiftiness thru the ways of light and with patience thru the dusky hive. He may see one of these coverings being cut out by the strong mandibles of the now fully-formed bee within. And there in the singing silence he may watch the little life make its way out of the close darkness of its embryonic solitude into the crowded teeming tireless life of the hive. He may see the big-bodied drones loafing on the combs or hear their buzzing as they fly.

On some one of the eight or ten combs that hang so straight and parallel down into the sweet-smelling hive, he may find the queen, wearing her gold-trimmed raiment with a royal air. Her faithful attendants in a circle around her, she walks quietly across the comb, examining one cell after another to see if it be ready for the precious egg that she alone, of all the thousands there, can lay. And while she deposits it, with her long graceful body curved down into the cell, her attendants stroke her gently with delicate antennae.

So all the mystery and marvel of this little people living there among his roses unfolds before him, till he forgets the press and turmoil of the marketplace, taut nerves relax and his soul grows glad and strong, eager and serene, while the hours go singing by.



## FROM NORTH, EAST, WEST AND SOUTH

**In Northern California.**—The year

1920 from a crop standpoint has been more or less disastrous. Alfalfa, our mainstay, was really our salvation; but even here the alfalfa output was scarcely more than half the normal. Jackass clover did well for a while; but almost all other fall bloom yielded practically nothing. Our fine Shasta honey (star thistle), one might almost say, hardly got into the market. On the other hand, there was nearly an average crop of orange honey and there is a tendency for more and more beekeepers to migrate into the southern valley for this excellent and almost sure source of nectar. Honeydew honey was conspicuous by its absence, and our usual large output of inferior grades was this year reduced by about two-thirds. The disease situation and the condition of the honey market during the fall months have been quite as disastrous as our crop shortage. There remains, however, one redeeming feature, the fact that we have had a live marketing organization. Everyone of us feels that, were it not for the California Honey Producers' Co-operative Exchange, our honey would be selling around eight and ten cents a pound instead of at the very satisfactory price which we have been getting and still are getting thru the Exchange acting as our agent.

Let us look into the coming year regarding our future prospects. In past years we worried much over our marketing problems; but nowadays these problems are the least of our troubles. Weather conditions that control nectar secretion we need not worry over, for it would do us no good should we worry. But what we do need and can get and have had in the past is more education for the beekeepers. Why is it that trained beekeepers always get twice as much honey per colony as the untrained beekeepers? Bee journals and other printed matter help, but there is nothing more efficacious to the welfare of honey producers than to have them gather at convenient places and listen to the teachings of trained men along the lines of their profession. In the past we have had some most excellent short courses in beekeeping conducted by the U. S. Department of Agriculture in conjunction with our State University. These short courses have been sadly missed this winter, and, notwithstanding the fact that we have had a short crop and ever-falling prices, one of the most general questions asked today is: "Aren't the Government men coming out this winter?" California is a big honey producer, producing twice as much as any other State, and there are not a few of us that hope that these highly beneficial short courses so helpful in the past can be held during the fall and winter of 1921.

Modesto, Calif.

M. C. Richter.

**In Southern California.**—Honey

prices are not satisfactory to the beekeeper who is holding his 1920 crop. There was a short time early in the season when the buyers were offering 20c for white orange and sage honey. But very few sales were made at that time. As the season advanced, lower prices were offered. Now no wholesaler seems anxious to buy unless at a price so low that the average beekeeper does not care to consider it. The State Exchange has sold all of its orange honey and a good part of its sage at prices that will give the beekeeper a living wage and a little to go on.

Several apiaries containing from 100 to 700 colonies of bees have been sold at an average of \$10 a colony.

After a close examination, many more colonies are found that will need feeding than was expected a month or two ago. Many colonies that would perhaps struggle thru the winter will do much better if given a few pounds of feed.

The weather conditions are not as good as some time ago. In the early fall southern California had some rain, but of late (as the saying goes) "we have missed several awfully good chances." Vegetation, nevertheless, looks well and some good winter rains will enliven next year's prospects very much.

In the eastern part of Riverside County, next to the Arizona line, I recently passed thru the Palo Verde Valley, a part of the Colorado River Valley lands. This valley has some of the most fertile land in the world. Diversified farming was the rule until cotton prices went sky-high. Then practically the whole valley was put into cotton until this year about 26,000 acres were planted to this staple. Unfortunately the price of cotton has dropped to such a figure that many cannot afford to harvest the crops, and it is said that many acres will never be picked. While the beekeepers made a fair crop in this district, mostly from the mesquite, there is no doubt that where the farmers return to alfalfa and other crops, the honey yield will increase.

On my way from the Palo Verde Valley to Prescott, Ariz., I saw only one or two small apiaries. At Prescott I found dark granulated honey—said to have been made locally—in the stores, to be sold at 50c per pint jar.

From Prescott to Jerome there has just been completed one of the grandest mountain roads the writer ever rode over. Some of it cost \$67,000 a mile. From Jerome I passed thru the Verde Valley, where the beekeepers are moving their bees to get away from the smelters of the mining districts.

Beekeeping conditions around Phoenix, Tempe, and Mesa, Ariz., have been good





## FROM NORTH, EAST, WEST AND SOUTH



this year. About one case per colony on an average was produced. Mesquite, catclaw, and cotton furnished most of the honey. The cotton seemed to yield especially well in those regions.

An apiary of about 200 colonies near Tempe had become badly infected with American foul brood. It was condemned by the beekeepers and with the consent of the owner was entirely destroyed. Each of the apiarists interested gave his proportion of the colonies destroyed, and thus the entire apiary was replaced with healthy colonies. This is certainly a very charitable and commendable way to get rid of a diseased apiary.

Much of this year's crop of Arizona honey is still in the hands of the producers. Many of the beekeepers feel that an organization of some kind would be of much benefit. This would at least get the honey to central points and have it graded according to standard grades. The honey could be more readily shown to the buyers, and the prices would naturally be more nearly standardized.

Some cotton honey that I sampled was very white and had granulated until it was very solid. The beekeepers say that it will often granulate in two or three days. It had a flavor distinctly of its own.

My letter is being written up near the great Roosevelt Dam, that stores the water during the winter months and holds it in reserve for the long summer months when no rain falls on these desert plains. It is estimated that this reservoir will hold enough water for a three years' supply for the 205,000 acres covered by this project.

Corona, Calif.

L. L. Andrews.

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**In North Carolina.**—With apiaries generally settled for the winter, interest among beekeepers centers about the approaching session of the North Carolina Beekeepers' Association to convene in Washington on Jan. 11. It will be a one-day session; but it will be chock-full of interest according to President James M. Gibbs and Secretary-Treasurer J. E. Eckert, who for some time have been engaged with the general arrangement of the program. C. P. Dadant and J. J. Wilder are to be especially interesting guests from without the State who will take a prominent part in the program. Mr. Dadant is to talk of "The Large Hive," and touch upon "The Building-up of Commercial Beekeeping." Mr. Wilder will talk of "Beekeeping in Dixie." Government Bee Specialist C. L. Sams, who is doing so much for the quickening of interest in better beekeeping in this State, will have a large share in the program; and the other participants will include C. D. Duvall of Williamston, O. C.

Weill of Coolemeec, J. A. Ratcliff of Washington, and Prof. E. P. Metcalf of the A. and E. College, who has the direction of a special course in bee culture.

Thruout this State farmer beekeepers are becoming more and more interested in better beekeeping and in the advantages of standard equipment. R. J. Bryant of Ronda, talking for one of the state daily newspapers, said this week that this was an especially good season for beekeeping in his section, and that after 10 years of careful work among his half hundred or more hives he is convinced that his work with his bees is proving much more profitable than raising tobacco. He produced a splendid crop of sourwood honey this season.

Wilmington, N. C.

W. J. Martin.

\* \* \*

**In Ontario.**—Bees here in this part of Ontario have gone into winter quarters in rather poor condition so far as a late flight is concerned. Following a month of almost summer temperature all thru October, November was cooler than usual and not a day warm enough for a general flight. Here at home we waited in vain for an opportunity for a cleansing flight for our 60 colonies before going into the cellar. But no day warm enough came along, and on Dec. 6 they were carried in. The same cellar is being used that we had last year—the one built entirely underground and covered on top with cement roof and earth over all. We had hoped with thorough drying out for a year that a higher temperature would be recorded; but evidently we have hoped in vain, as the thermometer again stands at from 42 to 43, not varying a degree, no matter what it is like outside. This cellar is perfectly dry to all appearances; but, of course, that is too cool a temperature for best results, according to the best authorities.

While at the convention held in Guelph last week, evidence was forthcoming a plenty, that much honey is still in the hands of producers. Wholesale prices, nominally at least, have taken a heavy slump during the last 10 days, and the market is unsettled, to say the least. Importations of New Zealand honey and low sugar prices are given as the reason; but, above all, as I see it, is the general feeling of waiting to see what will happen. As a result, sales are either much restricted in volume or not put thru at all. But, as pointed out in the last issue of *Gleanings*, this state of affairs is only to be expected in the general line of readjustment that is taking place along all lines.

The convention already referred to was very well attended, altho I do not think that as many were present as is usually the case. Every courtesy was shown by the college authorities to make the visitors com-



## FROM NORTH, EAST, WEST AND SOUTH



fortable, Secretary Millen being especially busy. We were fortunate in having Dr. Phillips with us as well as Mr. Demuth, his late associate at Washington, D. C. Both these gentlemen gave very instructive addresses on bee-behavior, wintering of bees, etc. Mr. Kelty of Michigan also gave a splendid address along the lines of diagnosing the two foul brood diseases, and if any one who heard this address does not now have a knowledge of the symptoms of the brood diseases, it isn't Mr. Kelty's fault.

One of the outstanding points of interest at the convention was the Markle extractor placed on exhibition by the Hamm brothers of Brantford, Ont. Some improvements are noticeable, as compared with the machine shown in Toronto two years ago, and without exception, so far as I could find out by inquiry, every person that saw the machine was of the opinion that it would entirely revolutionize the honey-extractor of the future. The eight baskets of the machine are all very rigidly constructed and yet are not clumsy. With one hand they can be lifted out of the sockets for cleaning or other purposes. Nothing is in evidence at the top of the machine except the baskets, so every facility is present for rapid work. But the great feature of the machine is the wonderful reversing action which is controlled by a foot lever. By simply touching the control lever the combs can be reversed just as often as one wishes; and, what is more wonderful, these changes can be made while the extractor is at full speed, and with no injury to the combs. While the machine is spinning rapidly, the reversing action takes place so smoothly and quietly that no jar is noticed to the machine, and one's eyes have to follow the baskets very closely to notice the changing of position.

The beauty of the mechanism as to reversing so easily and rapidly comes in very nicely when handling heavy combs of thick honey or newly drawn combs. One side can be partially extracted, the comb reversed, and the process repeated as often as one wishes till the combs are clear of honey. All who have extracted much honey know just what that means. Another feature applies to the matter of setting the comb baskets at any angle desired. Experiments prove that combs placed at a certain angle offer less resistance to the air when the machine is in motion, and consequently cells are emptied more easily and more quickly than with the old-style baskets. As stated, the baskets are readily adjusted by set screws at the bottom, if I remember correctly. The foregoing observations are given from memory and by one who has little if any mechanical ingenuity; so, if some slight errors have been made in this short write-up, the manufacturers, or any others for that matter, will please consider where it came from. How-

ever, I regard this machine as a wonderful invention, and I sincerely hope that the man responsible for the improvements may reap a rich reward for his work. J. L. Byer.

Markham, Ont.

\* \* \*

**In Iowa.** — The unexpected has again happened. The bees were not snugly put away in the cellar until today, Dec. 15. They were flying Dec. 13, after a heavy thunder shower, which that night turned into a light flurry of snow, this mostly melting off the next day. This is the latest we have ever left our bees out. Our records show Dec. 6 as the next latest, and more often about Nov. 20.

In my last letter to Gleanings I said the demand for honey was very moderate. Since that was written conditions have grown worse, and I now say the demand is very extremely and decidedly moderate. In fact, it has moderated until it is so quiet that you can scarcely hear anything that sounds like honey. I have never seen such a condition since I have been in the bee business. I have about 350 mail-order customers, and under ordinary circumstances these would have taken all I produced. By Jan. 1, 1920, I had disposed of about 23,000 pounds of honey and could have sold more. I have sent out my second batch of price lists, with the price somewhat reduced from the first (something I have never done before), but can see nothing gained as yet from doing so. I doubt very much if the slashing of prices would do any good under present conditions. It just seems that people are not buying honey. The fact of the matter is that everybody is buying just as little as possible, and that little is what they must have. Honey is not the only thing that is a drag, and beekeepers should not get discouraged or excited and slash prices clear below reason. It would only make matters worse, and the beekeeping fraternity would all suffer alike. The present conditions cannot always last. We may have to lower our prices in some instances, but don't let us lose our heads and slash the price away below cost of production. If you do, remember the big buyers will gobble it mighty quick, and you have gone a long way to destroy fair honey prices.

I read Mr. Chas. Blaker's contribution to this department last month with much interest, especially what he had to say in condemnation of the inspector's work being solely educational, and doing away with the inspection of bees and the law. Amen. I hope Minnesota will never be so foolish as to nullify the law giving the inspector authority to inspect bees and to see that the fellow who has foul brood cleans it up.

W. S. Pangburn.

Center Junction, Iowa.



## HEADS OF GRAIN FROM DIFFERENT FIELDS

**Rendering Diseased Combs.** I most heartily endorse what editor has to say in December Gleanings (page 714) regarding the shipping of diseased combs

—at least I endorse up it to the point where he advises heating them in water, and then shipping the residue. I am not at all sure that they would be sterilized by such treatment, unless they were boiled for a long time. Another fatal objection to such a plan is the fact that such residue will be destroyed by mold in a very few days, especially in warm weather. I have tried the method more than once and have always found that the last state of those combs was worse than the first.

After rejecting the Editor's suggestion, I do not find it so easy to give a better one. I have rendered many diseased combs myself, and think that I can do it safely; but it requires such very careful handling that it is doubtful if it ever pays, unless one has a place especially prepared for the work. My advice to all who have diseased combs is to dig a hole in the ground, make a good fire in the bottom of it, and burn the combs, frames, honey, and all, and then fill the hole with earth. As an inspector who has watched the attempts of the average beekeeper to treat diseased colonies and save the wax, I do not wonder that diseases of bees are widespread. It seems rather a marvel that any healthy colonies are to be found.

Newman, Ills.

C. F. Bender.

**Beekeeping in Northwest Washington.** Bees in northwestern Washington are wintered outdoors in single-walled hives.

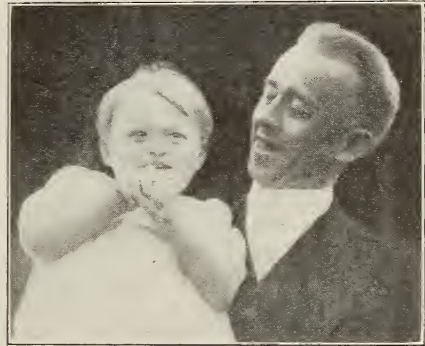
Sometimes a cheap shed is erected over them. The problem here in wintering is not protection from the cold so much as it is protection against dampness. The spring bees came thru the winter in good condition, with but few losses.

Bees can often take frequent flights thru the winter months. In February they start to gather pollen. In the latter part of April, according to weather conditions, the fruit bloom and the dandelion bloom start, which often offer a surplus of honey, if the colonies are strong and weather conditions are favorable. Sometimes a wet spring will hinder the bees from working, and as a result often affect the fruit crop. The white-clover flow starts in June and extends well out into July. After the white-clover flow, nectar is gathered from the fireweed, which in many localities grows and blossoms abundantly, and which is a source of much delicious honey. These are the three major flows, altho there are many flowering plants that bloom along thru the spring and summer.

Ferndale, Wash.

Carl J. Menze.

**The Honey Babe.** I will try to give a few facts of feeding honey to my babe. At nine weeks she was very ill, and we could see that the two physicians who were doctoring her were giving her no relief. We felt that she was fast slipping from us. In desperation we began experimenting with her food ourselves. We started her on Eskay's food and added  $\frac{1}{2}$  to 1 teaspoon of honey to each bottle, and between each feeding when she would cry from hunger we used a comforter dipped in honey. We kept her bottles regular that



This baby, honey fed, was won back to health.

way, increasing the honey according to the increase in food. She gained from the first feeding. After her first honey bottle as we called it, she went to sleep and slept eight hours tho she had not been sleeping more than ten minutes at a time for a few weeks. May I add it was the longest eight hours in my life I ever put in. We felt that perhaps we had killed her; but when she woke up she was fine, and has never been ill since. Today she has all the honey she can eat and has it practically every meal. At 20 months she has 20 teeth and is strong in every way. I find honey superior to sugar for a child's food, since sugar tends to ferment the food in the child's stomach while honey does not have that tendency.

Mrs. F. R. Tompkins.

Niagara Falls, N. Y.

**Egg-Eating Bees.** Having had considerable time on my hands this past season, I have been able to study the habits of my bees more closely than ever before.

I have an observation hive in which I put a virgin queen with a handful of bees. I was naturally interested to see when the queen began laying, and I spent a lot of time watching for her. Finally I saw her come out of the crowd and lay in the lower cells, but next day these cells were empty. In a

## HEADS OF GRAIN

FROM

## DIFFERENT FIELDS

day or so she laid in them again, but no brood came in those cells. So I concluded the bees knew they could not keep these eggs warm, and so did away with them. I have lately read the statement by Dr. Phillips that the bees eat the eggs of drone-layers.

I once had a queen that used to put two to seven eggs in a cell, and yet everything went along quite normally in the hive. There were other hives that did better and had more brood, so it looked to me as if they destroyed those extra eggs, instead of distributing them around in empty cells as good bees are supposed to do.

From these observations it seems that it is quite likely that many a queen gets blamed, when the workers are really to blame for not making an effort to raise brood from all the queen's eggs. Of course, if the queen is the mother of these bad bees, she may be partially responsible for their characteristics. But I think it is more likely that conditions at the time, such as the age of the nurse bees, amount of stores, pollen, and all the general conditions that make a good working force—these will decide whether the eggs will be destroyed or not.

Will H. Gray.

Northlonsdale, B. C.

**Prominent Australian Apiarists.** F. R. Beuhne has spent some 28 years of his life among the bees, and his apiary is a model of what an apiary should be. Situated in an orchard, it has an extremely picturesque appearance and is as neat and orderly in arrangement as it can well be. The honey-house is most compactly

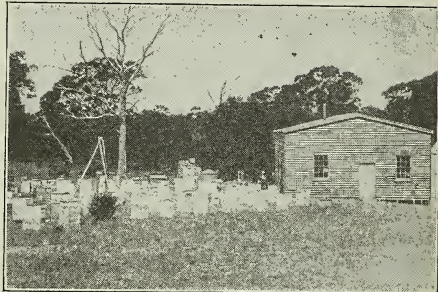


A picturesque apiary belonging to F. R. Beuhne at Tooborac, Victoria, Australia.

arranged, as there is a place for everything and everything is in its place.

Mr. Beuhne was for many years president of the Victorian Apiarists' Association and has been one of the main forces in holding the association together. Besides being a

good beekeeper he is also a first-class botanist. His writings on the honey-producing flora of Australia are most valuable and should be in the hands of every beekeeper in Australia, California, and other parts of



Mr. Cutler's apiary and honey-house.

the world where the eucalyptus is largely grown. What comes from Mr. Beuhne's pen can be relied upon as coming from one who has had a wide experience.

Another successful apiarist is Herbert Cutler, who gave up business in Melbourne to take up beekeeping. His is another model apiary.

Have you ever noticed that beekeepers with a business training are invariably successful? They have been trained to those systematic methods of working so essential in the management of a large number of colonies, and they appreciate the advantages of attention to detail in marketing their produce in an attractive and uniform style. Mr. Cutler's honey and wax always bring top market price because the goods and packing can be relied upon.

Besides the home apiary Mr. Cutler has several out-apiaries. He uses the modified Heddon hive principally, tho he also has some Langstroth hives.

B. Blackburn.  
Melbourne, Australia.

**Wax Production.** Last year in the June Journal of the Franklin Institute there was an interesting article by Enoch Karrar, Ph.D., Research Department of the Philadelphia United Gas Improvement Company, on the efficiency of light production in organisms. One part of it throws some light on the production of wax. He says that it has been found that 12 g. of cane sugar will produce 1 g. of wax. At another time, 24 g. of sugar produced 1 g. of wax; but now comes the important point: The energy content of sugar is 1860 calories (Farmers' Bulletin No. 142 gives it as 1750; calories of honey, 1420; maple sugar, 1250; molasses, 1225), whereas beeswax is 9043



## HEADS OF GRAIN FROM DIFFERENT FIELDS

calories, or about five times as much as sugar.

Sugar is composed of carbon, hydrogen, and oxygen— $C_{12}H_{22}O_{11}$ , and wax has less carbon and much less oxygen. This surplus of carbon and oxygen must be removed from the sugar, requiring the bees' energy (which is derived from the sugar). From the amount of calories in each it is apparent that, if there were no waste energy, it would require about five pounds of sugar, or  $6\frac{1}{3}$  pounds of honey, to make one pound of wax, so that, if the bees were 50 per cent efficient, it would require ten pounds of sugar, or  $12\frac{2}{3}$  pounds of honey, to make one pound of wax.

Looking at it in another way, it would be impossible for bees to make a pound of wax with less than  $6\frac{1}{3}$  pounds of honey. Then it would follow that if honey were worth 20 cents a pound, wax could not be produced by bees for less than \$1.30 a pound.

These figures may save some one from financial failure who intends to try raising wax as a business, as it would require very cheap honey to make wax at its present price—probably less than five cents, if not as low as three.

The article also mentioned that in one case it required much less sugar when pollen was used. By adding 8 per cent of pollen, over 30 per cent wax was produced.

Hammonton, N. J. C. E. Fowler.

**Wintering in Clamps With No Loss.** Last winter my bees wintered well and came out 100 per cent alive and very strong.

They were packed in single clamps with six inches of packing on all sides and four inches on the bottom. On the 20th of March I heard them humming very loud, so I cleared the entrances out. There was four feet of snow then in the bee-yard and the bees were flying well. Fearing I might lose my bees I drew two loads of manure from the barnyard and spread it on the snow. I did not lose a bee. As the snow went down the manure was always on the top, and when my neighbors told me they had just put their bees out from the cellar (the 15th of April), my bees were bringing in pollen, and the last of May I had to divide them. After that date we had six weeks of dry weather and then three weeks of very wet weather; but in spite of the two extremes they gathered 175 pounds per colony, and I made an increase of 80 per cent. The coldest weather in the winter of 1919 was 60 below zero, and the temperature remained at 50 below for two weeks. My bees had no windbreaks, only the clamps. I am wintering four colonies in one case this winter and the rest of the yard in single clamps. Other winters I have tried

to winter my bees with no bottom packing and they all died. Young queens, strong colonies, good stores, and good dry packing are the only way to winter bees here. When we winter in a cellar they have to have spring and fall protection, but the winter clamp is always ready for the cold and the heat.

I use the standard hive with Dr. Miller's two-inch bottom-board. I make my increase on the Alexander plan, sell my crop at home, giving good value for cash received, and put my honey up in no less than five-pound pails. I have a daughter nine years old that helps me in our apiary. She says she is going in for section honey on her own hook in 1921. So she is buying a one-pound package with an untested queen for her start. She will start young and I hope start right. She is all taken with that young beekeeper on page 614 of October Gleanings.

New Ontario, Canada.

A. Hulcoop.

### Need of Two-Day Schools in Beekeeping.

An apiary inspector in Indiana, I have come to the conclusion that the people that keep bees and are not beekeepers, surely do need more education in beekeeping; and I think it would be a good thing if more States would try a two-day school for beekeepers, such as Michigan held last year in nearly every county of the State.

Indiana is doing fairly well, but we could do a whole lot better. We have been taking auto tours this last season, going around showing how to transfer, treat diseases, etc., and especially how to use the modern hive, which I think is one of the most important parts of the whole bee business for the amateur. I have found plenty of places where they have discarded good hives and were using old box hives just because they had used no foundation and did not have the hives put together right. They thought the hives were no good and cost more than boxes. I found one locality where there were plenty of good hives, but they had used no foundation nor the tin rabbets that go with the hive, and, of course, there was about  $\frac{3}{4}$  of an inch of honey between the super and the frames. Removing the super from such a hive and looking for foul brood makes a pretty bad mess. When I asked them why they did not use the rabbets, they told me that the bee-supply dealer did not give any with the hives, and they did not know there was anything missing; so I went to the man that had sold all these good hives. He had 23 colonies of his own, but I found them all in the same condition. When asked why he did not use the rabbets, he told me that he never knew where they went. He had them

## HEADS OF GRAIN FROM DIFFERENT FIELDS

lying all around in his shop. Some he had used to nail on his inner covers. Now this man has been keeping bees for 23 years and selling bee supplies for that long, and yet did not have a single hive that I could lift a frame out of. So I do not think he has given the modern hive a very good boost. I believe that every man that sells bee supplies should know how to put them up and should strongly urge the use of comb foundation.

T. C. Johnson.

Logansport, Ind.

**Must Have Bees steal eggs? No doubt**  
**Stolen Them.** about that. One could not prove it in a court of law, as he would have to have witnesses who saw the bee steal the egg and get away with it. I have several times come across colonies (queenless, of course) with only one or two eggs, from which they raised or tried to raise queens as early as February. If they did not steal those eggs from some other colony, where did they come from?

Fredericktown, Mo.

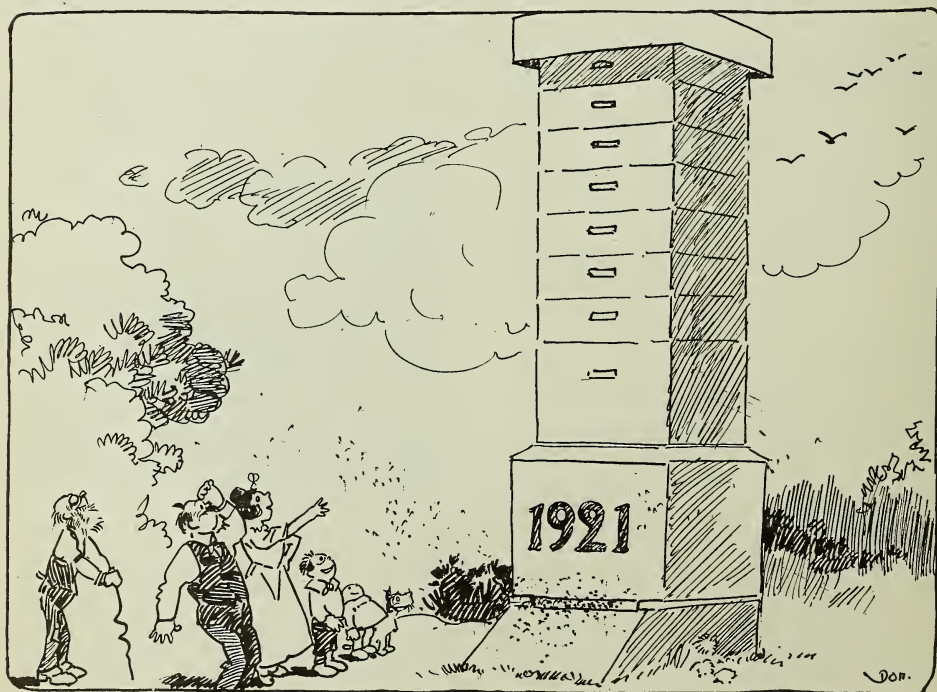
Jas. Bachler.

### The New Year. By Bill Mellvir

(With Apologies to Walt Mason.)

I hail the bright and glad new year—I say to it “Good day” and shall not stop to shed a tear for that one passed away. The old year goes out with a wheeze all limp and rheumy-eyed, the new year comes in like a breeze all wool and three feet wide. The old year when its tour began was full of buoyant hope, but now we’ve put it in a can as disappointing dope. I hail this newborn stranger now. I hope he has the goods to give us all the laws allow and lead us from the woods. I hope the bees will winter well and be so strong next spring that every colony will swell with pep and go, by jing. I

hope we’ll have a honey flow that fills up shot-tower hives so we can have some coin to blow for fodder for our wives. But when we’ve earned the rubles fine I hope we’ll save a few to salt away in luscious brine as all the wise ones do. But if the new year brings no wealth I hope he’ll not forget to bring us all most joyful health for that’s the best thing yet. Then we can warble and perspire thruout the summer’s day as busy as a house afire till time to hit the hay. The old year’s buried out of sight beneath the grime and grit. The new year starts his hopeful flight and ought to make a hit.





A WELL attended meeting of the executive committee and friends of the American Honey Producers' League was held at the Great

Northern Hotel, Chicago, on Dec. 6 and 7, all members of the committee being present as well as a considerable number of prominent beekeepers from widely separated parts of the country. This meeting was largely for the purpose of discussing matters of large importance to the League in advance of the second annual meeting, which is to be held Feb. 15 to 17, at Indianapolis. Great interest was shown at this executive committee meeting of the League. As a result, the annual meeting to be held at Indianapolis next month may be expected to be largely attended and its results important. Every beekeeper and every friend of beekeeping in the country, who can attend the Indianapolis convention either as delegate or friend, should be there.

\* \* \*

The Tennessee State Beekeepers' Association will hold its annual convention at Nashville on Jan. 27, 1921.

\* \* \*

The annual meeting of the Ontario County (N. Y.) Beekeepers' Society will take place on Jan. 11, 1921, at the courthouse in Canandaigua.

\* \* \*

Ohio State University will give another beekeepers' short course, Jan. 31 to Feb. 5. Dr. E. F. Phillips of Washington will be in direct charge. Editor Geo. S. Demuth of Gleanings is also to be on the program.

\* \* \*

The Division of Bee Culture, University of Minnesota, will hold a short course for Minnesota beekeepers Jan. 3 to 8, 1921. Francis Jager, chief of division, in making this announcement, says that an effort is being made to make this short course of unusual interest.

\* \* \*.

O. E. Timm, secretary-treasurer of the Nebraska Honey Producers' Association, Bennington, Nebraska, announces the fourth annual meeting of the Nebraska association to be held on Jan. 4, at the University Farm at Lincoln. There is a very full program, and a special effort will be made at this meeting to get a new foul-brood law enacted in Nebraska.

\* \* \*

An important convention of Florida beekeepers, comprising several adjoining counties, was held Dec. 3 at Tampa. An organization was effected and a constitution adopted. A recommendation was put thru setting aside a week in the first part of the year to be observed as "Florida Honey

## JUST NEWS

Editors

Week," and petitioning the Governor of Florida to declare the first full week in January as Florida honey week. On the following day at Bra-

dentown there was a meeting of the Manatee County beekeepers at which W. A. Selser and E. R. Root were the speakers. The plan of a honey week throught the State was indorsed.

\* \* \*

The 32d annual meeting of the California State Beekeepers' Association will cover a four-day session Mar. 1, 2, 3, and 4, 1921, in Oakland. Cary W. Hartman, president of the Alameda County Beekeepers' Association, and chairman of the program committee for the annual meeting, writes that it is expected to make this the biggest and best meeting in the history of the organization.

\* \* \*

The beekeepers of Deschutes County, Ore., met at Redmond on Dec. 7 and organized a county association. The officers are: President, A. J. Sanford of Redmond; vice-president, B. D. Becker of Tumalo; secretary, County Agent Jamison of Redmond; treasurer, John Marsh of Tumalo. Oregon beekeeping interests are being well looked after at this time by her extension specialist in bee culture, H. A. Scullen, of Corvallis.

\* \* \*

Beekeepers of New Jersey are looking forward with much interest to the annual meeting of the New Jersey Beekeepers' Association to be held on Jan. 13 and 14, 1921, at Trenton. C. P. Dadant is on the program to discuss the Dadant hive and system of beekeeping. Geo. H. Rea, extension specialist in apiculture for New York State, and Mr. Myers, a large honey-producer of the same State, will also address the meeting.

\* \* \*

Thomas Newcastle, the father of beekeeping in the Hawaiian Islands, died at his home in Honolulu on Nov. 16. He was not only the first practical beekeeper of the Islands, but also the first extensive honey-producer to operate there. He had been a resident of Honolulu for 42 years and at one time had an apiary of 500 colonies within the city limits of the Hawaiian capital.

\* \* \*

N. B. West, inventor and manufacturer of the West queen cell protector and the spiral queen cage, died at his home at Middleburgh, N. Y., on Nov. 9 last, at the age of 76 years. He once told a friend that both the spiral queen-cell protector and the spiral queen cage were suggested to him by the spiral spring used in the hanging device of a bird cage.

**Q**UESTION.—  
I have  
carefully  
this summer for  
traces of disease,  
but saw no trouble  
until cool fall  
weather came. This  
morning with a  
wire I pulled out  
a small saucer of dead bees, nearly all of which  
are young and some are undeveloped. If the bees  
continue to die, would you destroy them this fall  
and extract the honey?  
New York.

**Answer.**—The undeveloped bees which you found on the bottom-board do not indicate that the brood is diseased. It frequently happens in the fall that some of the last brood in the hive, even when nearly mature, is abandoned by the bees. It is not known why bees should ever do this, but it is probable that during cool nights, in forming a cluster, they leave some of the brood exposed which is then chilled and afterwards carried out.

**Question.**—I intend to buy package bees in the spring and hope to get some surplus honey from them. Will five pounds to the colony in ten-frame hives be enough for this?  
Ohio. Theodore Robinson.

**Answer.**—The number of pounds of package bees which you will need in each hive depends upon what time they are received in reference to the honey flow. Five pounds of bees at the beginning of a short honey flow would not be enough for most profitable honey production, since the honey flow would probably close before young bees in sufficient numbers would be ready for field work. After you put the bees in the hive, it is three weeks before young bees begin to emerge and about two weeks more before these young bees begin to work in the fields. Therefore the field force would be constantly reduced by the old bees dying off for five weeks after the colonies are established.

If the package bees are received five or six weeks previous to the beginning of your main honey flow and each colony is supplied with an abundance of stores as well as empty combs, so that brood-rearing can be carried on extensively, there should be a great horde of young bees ready to gather the crop of honey; and, in this case, their numbers are increasing instead of decreasing. Three pounds of bees should build up to sufficient strength in time for the honey flow, if the packages arrive six weeks previous to the honey flow and even two-pound packages should give good results.

**Question.**—What do you think, for winter, of a hive with brood-combs running cross-wise with the entrance at the side of the combs instead of at the ends? And how would it be for summer?  
Montana.

E. A. Tropp.

**Answer.**—Years ago this arrangement of combs was thought to be important for winter. It was called the warm way, and many of the earlier types of movable-frame hives were arranged as you suggest. The plan has

## GLEANED BY ASKING

Editors

been abandoned by most beekeepers, however, and it is probably of no great importance, especially when the entrances are closed down to a

small opening for winter. During the summer, it may be easier for the bees to ventilate the hive if the entrance is at the end of the combs, but the chief reason for having the entrance at the end of the hive is because it is desirable to have the bottom or floor of the hive slope toward the entrance so that water will run out. This would throw the combs out of plumb if the entrance is placed at the side.

**Question.**—The combs in my hives appear to be of considerable age. Would you advise that I replace these old combs with new foundation in the spring?  
Virginia. N. E. Anderson.

**Answer.**—It is not necessary to destroy combs because of their age. You probably have in mind the fact that the cocoons are left within the cell when the young bees emerge, thus making the cells a trifle smaller. After many generations of bees have been reared in the same comb, the bees may tear away the walls of the cells and rebuild them. In doing this, the base which is now greatly strengthened by cocoons, is not torn away, thus making the overhauled comb stronger than a new one. Drone-comb, of course, should all be removed except the few small areas usually found in the lower corners of the frames.

**Questions.**—How would this plan work in running for comb honey? Use  $\frac{3}{8}$  x 14-inch entrance, place upon the bottom-board a queen-excluder, then an empty shallow super (without frames), then the regular brood-chamber, and add comb-honey supers as needed. (1) Would not the empty shallow super underneath the hive give clustering space to the extent of controlling swarming? (2) If a swarm did issue, the queen being detained by the excluder, would she not, after two or three attempts at trying to swarm, kill all cells and abandon the swarming idea?  
Pennsylvania. Ralph Gaston.

**Answers.**—(1) One difficulty with this plan is that the empty space for clustering provided below the brood-chamber would not remain empty very long during the honey flow, but it would be filled with combs. Swarming might be delayed while this space is being filled, but later such colonies would probably swarm during seasons favorable for swarming. Another objection to giving this extra room is the delay in the beginning of work in the comb-honey supers because of the room for comb-building below. This delay in the beginning of work in the supers until considerable honey is stored in the brood-chamber would, in fact, increase the tendency to swarm. In order to use this principle in comb-honey production, it would be necessary to fill the shallow extracting



super with slats, so spaced that no combs would be built between them but leaving room for a large number of bees between the slats. Dr. Miller used a deep bottom which provided a two-inch space under the brood-combs, and a rack was used in this space to prevent its being filled with combs. Such an arrangement should reduce the tendency to swarm, but cannot be depended upon to prevent swarming in comb-honey production. (2) The old queen would probably not have an opportunity to kill the young queens in their cells, but after two or three unsuccessful attempts to go out with the swarm she would be killed by the workers. Later, when the young queens begin to emerge, the colony would attempt to swarm again, and, unless a virgin queen should escape thru the excluder, the colony would attempt to swarm every day or so until but one virgin queen remains alive. In the meantime, with so many attempts to swarm, the colony would not accomplish much in the way of work in the supers.

Question.—At the close of the honey flow, I left with each of my two colonies a half-depth extracting super about three-quarters filled with honey. I have contracted the entrances and wrapped the hives with tar paper. The temperature seldom reaches the freezing point here in southern California. I wish you would criticize my methods and advise how to operate in springtime.

California. Dr. W. G. Chambers.

Answer.—Leaving a shallow extracting super full of honey, or even three-fourths full, for each colony in addition to the honey they may have in the brood-chamber at the close of the season and contracting the entrances for winter are both steps in the right direction for good wintering. Wrapping the hives in black paper, however, may not be good practice for southern California, since the black paper may absorb too much heat from the sun during the day and induce the bees to fly at times when it would be better if they would remain quiet in the hives. If some kind of packing material is placed between the hive and the black paper, the day and night temperature within the hive would not vary so much, which should result in greater quiescence and therefore better wintering. Unpacked hives which are painted white will have less daily variation of temperature than dark-colored hives, especially in your climate, on account of the dark-colored surface absorbing more heat from the sun than a light-colored surface. The important thing about spring management is to see that each colony has an abundance of stores in advance of immediate needs as well as plenty of room for brood-rearing during the six or eight weeks just preceding the beginning of the honey flow, in order that brood-rearing may proceed at its maximum rate during this period. If the bees cannot gather nectar from some minor sources, you should see that each colony has never less than 15 to 20 pounds of honey thruout this important brood-rearing period. In order to supply sufficient room for the

greatest development of the colonies previous to the honey flow, you may find it necessary to add a second full-depth hive-body, since the single brood-chamber and the shallow extracting super may not afford sufficient room for both brood-rearing and a supply of honey, especially if the bees are able to gather nectar from minor sources.

Question.—I have one colony which covered only six frames this fall. They have about 15 pounds of stores but were packed with about eight inches on all but the front. Will they need to be fed early in the spring?

Theodore Robinson.

Ohio.

Answer.—While 15 pounds of stores may be sufficient to last a well-protected colony until brood-rearing is begun, it is not at all safe to depend upon this amount for winter. Your bees will probably begin to rear brood in March, and from that time on they will consume their stores rapidly. By selecting a warm day in March, you may be able to feed warm sugar syrup by placing the feeder immediately above the cluster, then replacing the packing around the feeder. The ordinary friction-top pail with small holes punched in the cover may be used for this purpose. In the meantime, it will be advisable to give the bees a cake of hard candy, to be sure that they will not starve before you can feed them sugar syrup.

Question.—I have my bees in the cellar with, I believe, enough stores for winter. Would you advise me to look about the last of January to see how much honey is left for their use?

Iowa.

Edward Melsh.

Answer.—Usually it is best not to disturb the bees while they are in the cellar; but, if there is danger that they will run out of stores, it is better to examine them and supply stores, if necessary, than to let them starve. With only a slight disturbance to the colony, you can lay a frame of honey or a cake of candy on top of the brood-combs to make sure that the bees will have enough food to last until spring. In this case the cover being removed, the top of the hive should be covered with a blanket or some old clothes to prevent the escape of too much heat from the hives.

Question.—I want to start bee culture and would like to get Cyprian bees. I have had experience with other breeds, and I think I could manage the Cyprians. If you would know where I could purchase them, write me the address.

Ohio.

James A. Wolfe.

Answer.—We do not know at present where you can obtain any pure Cyprian bees. They were sold in this country to quite a considerable extent along in 1884, 1885, 1886, and 1887, but the bees were so horribly cross that almost everyone was obliged to give them up. They are good honey-gatherers, however, but they will sting on the least kind of provocation, and smoke is utterly useless in the handling of them, and because they gather no more honey than good Italians they have been generally abandoned. There is so little demand for them that no one has offered them for sale,

**M**OST of the bees in Ireland have died of the Isle of Wight disease during the last few years. Bee-keeping is in a backward condition generally here, most beekeepers having only a few hives. Yet the country should be a grand one for honey production, for goose or furze, hawthorn, lime or basswood, sycamore, and white clover abound; while in autumn there are many thousands of square miles of magnificent heather laden with the most delicious of all honeys. The Italian bee is almost unknown and is generally supposed to be very vicious and still more so in its crosses with the native bee. I imported two queens from Penne last summer."—E. O'Brien, Mount Eagle, Dublin, Ireland.

"Please educate the queen-breeders to raise but one kind of untested queens, and let's make them of the select variety. Many queen-breeders have lost my trade by listing two kinds of untested queens—the good and the bad."—Geo. W. Moore, Centro Costa County, Calif.

"I finished extracting today (Nov. 17) or rather quit for the present, for there is considerable in the supers yet. I began the year with 130 colonies; increased to 264, and took 20,000 pounds of honey that nets me 25c per pound. How is that for a beginner in what almost everybody calls a poor honey State?"—C. C. Cook, Lee County, Fla.

"The fall honey flow during August and September and up till Oct. 20 was the best we have had in many years. This flow was mainly from cotton, it being too dry for either broomweed or goldenrod. All beekeepers who have young queens, will have their bees go into winter quarters in better shape than in a long time. Nuclei that I made on Aug. 8 have built up to fine colonies, and gave me 25 pounds on an average and have more than enough to carry them thru. During the last of the flow some colonies filled a full depth super in a week, not 35 pounds of honey, but perfect wired combs, the kind that hold honey. Since Oct. 20 we have had much rain, which was really needed."—W. T. Rabb, Travis County, Texas.

"The metal cover of the regular hive is 18 x 22 inches, and that of the Buckeye hive is 21 x 25 inches. This is quite an area, practically all of which ordinarily drains off upon the alighting board. This dripping from rain or melted snow and even heavy dew falling directly in front of the entrance is undesirable. In moist weather in summer this dripping continues for some time after the rain has stopped and this results in return-

## BEES, MEN AND THINGS

(You may find it here)

ing bees often getting caught (tumbling over in alighting and getting wings stuck to the wet entrance). Why not arrange the hive-stand to be a very little bit

leaning right or left, so slightly, however, that it would not be noticeable but yet would cause the water on the metal cover to drain off in any direction except on the front "porch."—Geo. J. Griesenauer, Cook County, Ills.

"Bees have gone into winter quarters in fairly good shape, but not overburdened with honey. Our usual last flow from rabbit brush practically failed on account of a heavy rain storm, and a succession of cold nights."—T. V. Damon, Lyon County, Nev.

"I think it would be a splendid thing if the readers of Gleanings could be given a chance to purchase some of Dr. Miller's gladiolus bulbs some time between now and spring, even if only one bulb were allowed to a purchaser. What could be a more touching memento?"—Herbert Lyon, Westchester County, N. Y.

"My bees did finely this year. Took 800 pounds of comb honey off eight hives. One hive made about 132 sections. I am about four minutes' walk from the heart of town. All of my 15 swarms are full-blooded Italians except two which were swarms given to me this fall. I expect to get Italian queens for them next summer."—A. C. Smith, Columbiana County, O.

"Altho I usually extract by the last of June, this year it was July 15 when I first found buckwheat coming in bloom, and then I extracted all supers. I had the clearest honey I ever had, a very light amber or lemon color. It sold very fast. Some customers that I have visited again this fall like the dark better, saying it had more taste."—Robert Elwill, Providence County, R. I.

"I am much interested in the series of articles on comb honey by Editor Demuth, as I have been producing comb honey almost exclusively for the past 37 years. The last two years I have extracted some but do not find as good a sale for extracted honey as I did 40 years ago. I had one swarm of bees this season that finished 300 sections of comb honey. This was the most I ever took from one hive in a single season and I sold it for 37½ cents per section at wholesale, making \$112.50 for the one hive. This looked good to me. I had another colony that swarmed on May 29 and I took 177 one-pound sections from it and 176 from the old hive, making 353 sections from the two at 37½ cents per section."—Geo. W. Baker, Wayne County, Ind.



IN the Cleveland Plain Dealer for Aug. 27, 1920, we find the following:

**TWELVE MILLION ORPHANS.**

Compilations of the Red Cross show that twelve million children were orphaned by the World War. A stretch of human imagination is required to understand the magnitude of these figures. A picture of approximately fifteen cities the size of Cleveland, inhabited only by orphans, furnishes some idea of the multitude of parentless children who are starting out, saddened and handicapped, to struggle thru a generation.

The orphan always is pitied by the whole neighborhood in which it dwells. Relatives, friends or charitable institutions usually try to comfort the unfortunate and to give it a chance while it battles thru childhood into manhood or womanhood. But even in America, where the care of orphans is exceptionally efficient, they have been deprived of something which cannot be made up by all the kindness offered. How much worse must be the plight of a great many of the parentless little ones in the war-torn nations where even strong men and women have trouble obtaining enough food and clothing to keep them alive!

What will become of the war orphans? In the coming years many thousands of them will emigrate to the United States to earn livelihoods and to establish permanent homes. Try as one may, no logical way can be found to remove from the shoulders of this nation a great amount of responsibility for the future of these orphans. America has a vital interest in the kind of men and women they grow to be.

The reactionaries in and out of the United States senate who are unalterably against our affiliation with the League of Nations would have us maintain a policy of "isolation" which clearly would further handicap the European orphans. League opponents would have America disclaim any responsibility for the prevention of another war which would produce another sad army of 12,000,000 or more orphans. But what do the millions of just and liberty-loving people in this country have to say?

I confess that I have been thinking of this matter before, of the orphans made fatherless, and sometimes motherless as well, as the result of the recent awful world-wide war; but the heading, "*Twelve Million Orphans*," startled me. But the Red Cross is probably sufficient authority for saying that the statement can not very well be an exaggeration or that a mistake has been made. My impression is, off-hand, that this world-wide war resulted indirectly if not directly in the loss of



Thy kingdom come. Thy will be done in earth as it is in heaven.—Matt. 6:10.

Love your enemies, bless them that curse you, do good to them that hate you, and pray for them which despitefully use you and persecute you.—Matt. 5:44.

They shall beat their swords into ploughshares, and their spears into pruninghooks: nation shall not lift up sword against nation, neither shall they learn war any more.—Isa. 2:4.

three or four million lives. This being true, it would not be at all strange if there should be the number of orphans mentioned to be cared for, or perhaps uncared for to a considerable extent by the whole wide world.

Who is responsible for all this? We are *all* responsible more or less. I came

pretty near saying that every man, woman, and child in the whole wide world is responsible to a certain extent for this savage and heathen fashion of settling differences by cutting each other to pieces; and even now while I write a large part of human industry is devoted to the matter of shorter and quicker ways of cutting to pieces or blowing to pieces humanity—men who, we are told, were created in God's own image. We have been sending missionaries to foreign lands to teach the heathen modern civilization and to spread the gospel; but, oh dear me! what a sad need there is of spreading this same gospel here in our own land! Some of you may ask me how this wholesale murder, sad and deplorable as it is, can be avoided. Well, now, friends, I am but a poor individual to undertake such a momentous task as to answer the question: but please listen while I try my hand at it.

In our great cities they have a police force to restrain crime and criminals. If one policeman can not manage a case he has means at his command by which he can call for help. If the entire city in a crisis is unable to handle the mob, rebels, or anarchists, or whatever you may call them, it can quickly summon help. Thanks to God that, with our wonderful methods of communication at the present day, the State militia can quickly be called out. If the State is not equal to the task, federal troops may be called; and I have never yet heard of a case where federal troops were unequal to the task—at least since the time of our own civil war. Well, what we all need to do to manage war between nations is an arrangement quite similar to that between the cities and nations of the world; but instead of calling out federal

troops we shall have something still higher—a concert of the powers and nations of the world. Well, I hardly need tell you that this very thing is under way, and our own beloved President of the United States has the credit of being one of the great principals in this movement; and yet we in our own country can not stand by him. In fact, our own citizens have been blocking the wheels to such an extent that while these nations—at least quite a number of them—are pushing ahead in this proposed league, our own country, at least while I write, Aug. 28, 1920, is hanging back when this nation really should be taking the lead in this crusade and greatest movement the world ever saw. May God help us in this crisis.

As I dictate, our nation is rejoicing in the victory for woman suffrage. I saw by the papers that there is a certain “gang” that claim they have some *women* as well as men among said gang, who are fighting just now “tooth and nail” to prevent the culmination of woman suffrage. I do not know whether anybody else has said it, but I said right out, it is the opponents of prohibition and of the League of Nations that are fighting so desperately to defeat universal suffrage; for everybody knows that the *mothers* of our land above all else and all others would be heart and hand in favor of prohibition and of the League of Nations both. People generally have suffered as the result of the world-wide war. Everybody and everything have suffered; but who can tell or who can measure the amount of suffering inflicted on the mothers of the whole wide world?

Let me digress a little once more.

During our own civil war in 1861 a poor ignorant colored woman stood leaning over the gate to watch the soldiers as they passed by on the highway. I do not know how long she stood there; but she evidently began to think there would be *no end* of the line of soldier boys; finally in desperation she said to the moving crowd, almost within arm’s reach, “I don’t suppose ‘you uns,’ *all* have names.”

It seemed to the poor colored woman that there could not possibly be names enough in the whole wide world so that each one of the moving throng could have a name of his own. A few days ago I went with my son Huber to the great busy city of Cleveland. While I was waiting for him to finish up some business on one of the busiest streets I started to read a daily. It happened to be about the time when the factories were closing down for the day, and crowds of men, women, and children were rushing here and there to

catch their respective cars on their way home. Most of them had dinner pails, while others had bundles of recent purchases, but all were in a hurry. It made me think of the bees at the time of swarming. The stream of humanity was more interesting to me just then than any daily paper or any sort of print in the whole wide world. I studied the faces of both young and old. I tried to imagine what sort of people they were. I wondered how many of that great crowd loved the Lord Jesus Christ; and then I thought of the poor colored woman and her remark, “I don’t s’pose you uns *all* have names.” Well, my view took in only a small part of one street in that great city. If one could get a view all at once, say from an airplane, of every street in the city of Cleveland, what a sight it would be! And yet that whole city does not contain at the present time even *one* million people; and we are told in that clipping from the Plain Dealer that it would take 15 cities of the size of Cleveland to hold the orphan children who were made orphans by the world-wide war. A few days ago I asked my oldest son, Ernest, if there really was a prospect of *another* world-wide war. His reply was something as follows:

“Father, I am afraid there is danger of another great war sometime; and it looks to me now that the only remedy is the present League of Nations. Forty-three countries have joined it, and we are the only great power outside of it. What I am afraid of is that it will not function properly without Uncle Sam’s help and co-operation. I doubt very much whether the other nations will accept a substitute of our making. The pity is that this got into politics.”

Now, dear friends, I hope each and every one of you will read the clipping at the head of this talk, not only once but several times over until you take it all in. Shall the whole wide world let this work of *making orphans*, by the *millions*, go on? Shall our own great United States, the nation that we have often claimed heads the world in all great and good reforms, stand back and refuse to act, simply because it may cost us some money to take part and perhaps cost us our own lives in the effort to have a world-wide crusade started for “peace on earth, good will toward men”?

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THE NEW SWEET CLOVER GROWN BY THE ACRE.

On Aug. 8 our photographer and myself visited the Ohio Experiment Station at Wooster and took the two pictures adjoining this. Our station received a little package of this clover seed at the same time I did,





No. 1—The new annual sweet clover as grown at the Ohio Experiment Station, Wooster.

and, as you will notice, "made the most of it." The seed was drilled (about the middle of May) in rows I think about 30 inches apart; but I presume they are satisfied by this time that this is altogether too close; and, as almost every seed germinated, the plants are too near together. I think they will average not more than an inch apart. This may be all right for feed, but it is certainly too close for blossoms or seed.

Picture No. 1 shows the field from a distant hill. No. 2 shows a near-by view, with your humble servant shading his face with his cap. Professor Welton, who was with us when the pictures were taken, in answer to my inquiry in regard to the value of sweet

clover, said something like this: "Theoretically and from analysis it stands ahead of all other clovers, and perhaps all other plants; and, altho we have made some experiments in regard to its value for *feeding stock*, I can not just now give the result."

#### NINE FEET TALL AND BRANCH 5½ FEET.

Planted seed from new sweet clover in my garden some time in May, 1920. I planted some seed from Ames, Iowa, at the same time. The Iowa seed has done somewhat better, but it may be due to locations tho in same row. I measured my best plant today, and it is fully nine feet tall. One branch that I measured was 5½ feet. The plants are covered with buds, blossoms and seeds, and on pleasant days with bees. Some seed is turning brown now, and I hope a lot may mature.

LEON E. GROUT.

East Jamaica, Vt., Sept. 30, 1920.

#### LIVED ONE WINTER IN ILLINOIS.

Tell Father Root that I had 38 stalks of annual sweet clover from seed sent last year, and it didn't die out the last winter, and I have gathered 12 pounds of seed the first seeding, and will get more the next crop as I didn't cut the stalks down. It bloomed again, and it was a sight to look at the ripe seed. Between the seed stems new blossoms came; but I stripped it to get the seed, and now the second crop is getting ripe.

Rio, Ill., Oct. 27, 1920.

A. N. COOKE.

#### THE NEW ANNUAL SWEET CLOVER.

##### SCARCITY OF SEED.

The letter below explains itself:

Dear Sirs: I am mighty sorry, but we are going to have to discontinue our advertising of the new Annual White Sweet Clover, unless we can secure a further supply of the seed somewhere.

Our own growing of seed is all sold now except a very small amount, and unless we can get some more dependable seed somewhere we will have to go to refunding money on the orders.

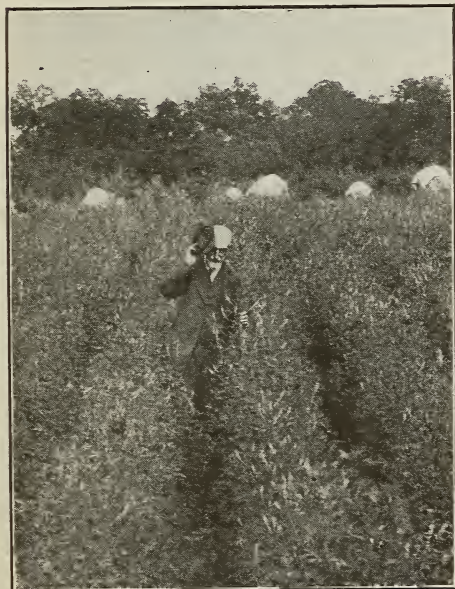
Do you have any idea where we can pick up any more seed?

Henry Field Seed Co.

By Henry Field, Pres.

Shenandoah, Iowa, Dec. 3, 1920.

In view of the above, if any of our readers have any seed to spare we will give a free notice of it; but, if the party is not known, reference should accompany the ad. As the seed of the old biennial looks exactly like the new, mistakes might be made thru ignorance or otherwise. We hope to be able to send right along very small free packets.



No. 2.—A glimpse of the same field taken near by, showing the height of the plants on one of the best places in the field.

## Classified Advertisements

Notices will be inserted in these classified columns for 30c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

### REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Edw. A. Winkler, M. Voinche, Fred Telshow, P. W. Sowinski, N. B. Quirin, E. C. Pike, Nevada Honey Co., Ward Lamkin, E. A. Harris, H. B. Gable, Chalou Fowls & Co., B. B. Coggsall, J. B. Brockwell.

### HONEY AND WAX FOR SALE

**FOR SALE**—Very choice white clover extracted honey in 60-lb. cans. Noah Bordner, Holgate, Ohio.

**FOR SALE**—Choice white clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

**FOR SALE**—Light amber honey in cans or half barrels, at 17c per pound. F. C. Ries, Macon, Ga.

**FOR SALE**—Clover and buckwheat honey in 60-lb. cans. Bert Smith, Romulus, N. Y.

**FOR SALE**—Fine quality well-ripened honey from the wild flowers of Old Kentucky in 60-lb. cans. Sample 25c. Adam Kalb, Brooksville, Ky.

**FOR SALE**—White clover and basswood blend honey in new 60-lb. cans, two in case. Sample 20c. Geo. M. Soward, Cato, N. Y.

**FOR SALE**—White and amber honey in 5-lb. pails, packed in cases of 12. R. C. Wittman, St. Marys, Pa.

**FOR SALE**—Fancy clover honey in 60-lb. cans. Sample, 15c. Jas. Hanke, Port Washington, Wisc.

**FOR SALE**—Clover honey with slight basswood blend, new 60-lb. cans; also buckwheat, 60-lb. cans. H. F. Williams, Romulus, N. Y.

**FOR SALE**—Fine quality buckwheat honey for table use in 60-lb. cans, 5 and 10 lbs. pails. E. L. Lane, Trumansburg, N. Y.

**FOR SALE**—Clover-basswood honey in 60-lb. cans. Also some buckwheat, sample 25c. Kenneth Gallant, Cato, N. Y.

**FOR SALE**—Choice clover extracted honey in 60-lb. cans, \$21.50 per case of two cans. Write for price on large quantities. J. D. Beals, Oto, Iowa.

**FOR SALE**—Well-ripened, thick and rich white-aster honey in 120-lb. cases at 18c f. o. b. Brooksville, Ky. Sample 25c. H. C. Lee, Brooksville, Ky.

For best table honey try a case of Weaver's sweet clover Spanish needle blend, none better. Price 18c in 60-lb. cans. Joe C. Weaver, Cochrane, Ala.

**FOR SALE**—White clover honey, almost water white. Put up in new 60-lb. tin cans, two to the case. Write for prices. D. R. Townsend, Northstar, Mich.

**FOR SALE**—Finest Michigan raspberry, basswood, and clover honey in 60-lb. cans, 25c per pound. Free sample. W. A. Latshaw Co., Clarion, Mich.

**FOR SALE**—20 cases buckwheat comb No. 1 and No. 2 grade, at \$6 and \$5 per case of 24 sections. H. G. Quirin, Bellevue, Ohio.

**FOR SALE**—Honey of a basswood and clover grade, put up in 60-lb. cans, 18c per pound, f. o. b. here. Sample 20c. W. M. Peacock, Mapleton, Iowa.

**FOR SALE**—Finest Michigan basswood and clover honey, well-ripened, and of good flavor, put up in 60-lb. cans. A. S. Tedman, Weston, Mich.

**FOR SALE**—First-quality clover and basswood honey at 20c, buckwheat at \$20.00 per case. In new 60-lb. cans. Howard H. Choate, Romulus, N. Y.

**WRITE** O. H. Schmidt, R. D. No. 5, Bay City, Mich., for prices on honey of exceptional quality, put up in 60-lb. and 5-lb. cans. Sample, 10c.

**FOR SALE**—White honey in 60-lb. cans, sample and price on request. Also white clover comb, 24 sections to case. The A. I. Root Co., Inc., 23 Leonard St., New York City.

**FOR SALE**—New water white sage honey, two 60-lb. cans to case, 20c lb. net; light amber Haitian, 440-lb. barrels, 11c lb. net f. o. b. New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

**WHOLESALE** prices to beekeepers for their winter trade, extracted alfalfa sweet-clover honey in 60-lb. cans, 16c per pound. Foster Honey & Merc. Co., Boulder, Colo.

Extracted honey. New crop white sage, white orange 20c a lb., L. A. alfalfa 15c, white Haitian 12c, amber 11c, Chilian 10c. Beeswax 30c. Walter C. Morris, 105 Hudson St., New York City.

**FOR SALE**—10,000 lbs. A1 quality white sweet clover honey, in new 60-lb. cans. Will sell in quantities to suit. Sample free. W. D. Achord, Fitzpatrick, Ala.

**FOR SALE**—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

**FOR SALE**—3000 lbs. of well-ripened clover honey at 20c per lb.; 12,000 lbs. of No. 1 white aster honey at 15c per lb. put up in 60-lb. cans f. o. b. Brooksville, Ky. Sample 25c. W. B. Wallin, Brooksville, Ky.

**FOR SALE**—Buckwheat-red clover blend honey at 17c a lb. and fine white clover and basswood honey at 22c a lb. in new 60-lb. cans, two to the case, f. o. b. here. Albert Boring, Hayts Corner, N. Y.

**FOR SALE**—Well-ripened extracted clover honey, 20c per pound; buckwheat and dark amber, 17c, two 60-lb. cans to case. Clover in 5-lb. pails, \$1.25 per pail; buckwheat and amber, \$1.00 per pail, packed 12 pails to case, or 30 to 50 pails to barrel. H. G. Quirin, Bellevue, Ohio.

**FOR SALE**—Michigan extracted honey in carloads or less. Our honey is of extra-good body and color this year. Producers should write for prices of glass and tin containers and maple syrup cans. Michigan Honey Producers' Exchange, E. Lansing, Mich.

**FOR SALE**—Clover extracted honey of unsurpassed quality; new cans and cases, prompt shipment. You will be pleased with "Townsend's quality" extracted honey. Not a single pound extracted until long after the flow was over; thus the quality. Would advise intending purchasers to order early, as we have only a half crop. Address with remittance.

E. D. Townsend & Sons, Northstar, Mich.

### HONEY AND WAX WANTED

**BEEWAX WANTED**—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.



**WANTED**—Bulk comb, section, and extracted honey. Write us what you have and your price.  
J. E. Harris, Morristown, Tenn.

**BEEWAX** wanted. Will pay highest market price. State quantity you have, and price wanted.  
M. E. Ballard, Roxbury, N. Y.

**WANTED**—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax, and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance.  
The A. I. Root Co., Medina, Ohio.

We buy honey and beeswax. Give us your best price delivered New York. On comb honey state quantity, quality, size, weight per section, and sections to case. Extracted honey, quantity, quality. how packed and send samples.  
Chas. Israel Bros. Co., 486-490 Canal St., New York City.

### FOR SALE

**HONEY LABELS**—New designs. Catalog free.  
Eastern Label Co., Clintonville, Conn.

**FOR SALE**—A full line of Root's goods at Root's prices.  
A. L. Healy, Mayaguez, Porto Rico.

**ROOT'S** goods at Root prices. A. W. Yates, 3 Chapman St., Hartford, Conn.

**FOR SALE**—Second-hand 60-lb. cans, 2 to a case, 30c a case. I. J. Stringham, Glen Cove, N. Y.

**FOR SALE**—One-pound jars in two-dozen cases, ten cases or more at \$1.75 per case, f. o. b. factory. A. G. Woodman Co., Grand Rapids, Mich.

**FOR SALE**—Annual sweet-clover seed, garden-grown, hand-stripped, 1 oz., 50c. Supply limited. Order early. S. Rouse, R. D. No. 2, Ludlow, Ky.

**FOR SALE**—SUPERIOR FOUNDATION, "Best by Test." Let us prove it. Order now.  
Superior Honey Co., Ogden, Utah.

**ROOT'S BEE SUPPLIES**—For the Central Southwest Beekeeper. Beeswax wanted. Free catalog.  
Stiles Bee Supply Co., Stillwater, Okla.

**FOR SALE**—One Ever Ready Starting and Lighting outfit, for Ford Cars, \$25.00.  
E. E. Lawrence, Doniphan, Mo.

**FOR SALE**—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, O.

**WILL** last a lifetime—new one-piece covers made from beautiful clear cypress well seasoned. Five or more, 60c each.  
A. J. Heard, 320 Calvert Ave., Detroit, Mich.

**FOR SALE**—To reduce stock, crates of 96 one-gallon cans, with bails and three-inch screw caps, at \$17.50 per crate f. o. b. Grand Rapids.  
A. G. Woodman Co., Grand Rapids, Mich.

**PORTER BEE ESCAPES** save honey, time and money. Great labor-savers. For sale by all dealers in bee supplies.  
R. E. & E. C. Porter, Lewistown, Ills.

**FOR SALE**—100 twin-mating boxes, \$1.00 each. Nailed and painted, and complete except for foundation. Used one season.  
Geo. A. Hummer & Sons, Prairie Point, Miss.

Sell your wares with Sign Boards, the silent salesmen. Plan now to sell next year's crop with them. Signs made to order. Prices reasonable. Satisfaction guaranteed. Investigate.  
H. A. Schaefer, Osseo, Wisc.

**FOR SALE**—One 30-30 Marlin rifle with telescope sights and reloading outfit, used very little. \$35.00.  
E. E. Lawrence, Doniphan, Mo.

**FOR SALE**—Good second-hand double-deck comb-honey shipping cases for 4¼ x 4¼ x 1½ sections, 25c per case, f. o. b., Cincinnati. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

**HAVE** sold all my bee supplies. Received so many answers to my advertisement in December Gleanings that I thought it would be best to put a notice in January Gleanings.  
H. C. Green, 939 West River, Elyria, Ohio.

**FLORIDA BEEKEEPERS**—You can save money by placing your order for Root's Bee Supplies with us. We carry the complete line. Will buy your beeswax. Write for catalog.  
Crenshaw Bros. Seed Co., Tampa, Fla.

**SPECIAL 5-GAL. CANS.** Have 300 cases left perfect Calif. used 5-gal. cans, 2 to case, heavy wood large screw cap cans. Will close out to first buyers. 60c case. Order quick.  
Hoffman & Hauck, Inc., Woodhaven, N. Y.

**FOR SALE**—5000 fences for 4 x 5 x 1½ sections to be used with slats, \$4.00 per 100; 50 ten-frame Danzenbaker comb honey supers, nailed and painted, good as new, \$2.00 each; 500 Alexander feeders, 30c each, f. o. b. Montgomery.  
J. M. Cutts, Montgomery, Ala.

**FOR SALE**—500 pounds of Dadant's light brood foundation for Hoffman frames, put up in boxes holding 50 pounds net. This foundation is in the best of shape, the same as I received it. I will not accept orders for less than one box. Price, 75c per pound.  
M. E. Eggers, Eau Claire, Wisc.

**FOR SALE**—Root's Extractors and Smokers, Dadant's Foundation, and a full line of Lewis' Beeware. Our new price list will interest you. We pay 38c cash, and 40c in trade for clean yellow beeswax delivered in Denver. The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

**FOR SALE**—An old good book, "The Winter Care of Horses and Cattle," by a great farmer, the late T. B. Terry. Mr. A. I. Root urged Mr. Terry to write this book, and he wrote the publisher's preface for the work. Any one who owns a cow or horse should own this book. We now have left only 150 copies of this paper-covered booklet of 50 pages. These we will sell to the first 150 people who send us 20c for a copy.  
The A. I. Root Co., Medina, Ohio.

**FOR SALE**—The following used goods in excellent condition, Root make: One Hatch wax press, single, price, \$12.50; one honey galvanized storage tank, 60-gal. capacity, price, \$14.00; one two-frame Cowan, hand-reversible honey extractor, price \$24.00. We require a larger outfit. Also one Oliver No. 5 typewriter, good as new, and including steel cover case, price \$19.50. Brand-new Wisconsin white pine, standard dovetailed ten-frame hive-bodies with full sheets medium foundation, wired, in Hoffman frames, including rabbets, nailed but not painted. singly, price, \$5.00; in lots of ten, \$4.25, or the lot of 50 at \$4.00. These were bought in excess of our needs.  
J. B. Hoppolter, Queenbreder, Rockton, Pa.

### AUTOMOBILE REPAIRS

**AUTOMOBILE** owners should subscribe for the **AUTOMOBILE DEALER AND REPAIRER**; 150-page illustrated monthly devoted exclusively to the care and repair of the car. The only magazine in the world devoted to the practical side of motoring. The "Trouble Department" contains five pages of numbered questions each month from car owners and repairmen which are answered by experts on gasoline-engine repairs. \$1.50 per year. 15 cents per copy. Postals not answered. Charles D. Sherman, 107 Highland Court, Hartford, Conn.

## WANTS AND EXCHANGE

WANTED—Several bee-outfits (preferably near home).  
H. G. Quirin, Bellevue, Ohio.

WANTED—Second-hand extractor. R. B. Smith, Villisca, Iowa.

WANTED—Hives of bees, Italian, 10-frame, any quantity.  
J. S. McKessock, Sudbury, Ont.

WANTED—Second-hand 10-frame Standard hives.  
R. B. Smith, Villisca, Iowa.

WANTED—A good honey location and bee outfit.  
Delbert Lhommedieu, Colo, Iowa.

WANTED—50 colonies of bees of any breeding. Bees from Minnesota preferred.  
Herman Voller, Aitkin, Minn.

WANTED—Back numbers of Gleanings in Bee Culture from January, 1899, to June, 1920.  
W. H. Humphries, Midvale, Va.

BEE SWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered.  
A. I. Root Co. of Iowa, Council Bluffs, Iowa.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax.  
Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

WANTED to correspond with parties having bees in 10-frame standard hives, that will lease them on shares. Will give good contract and references. Have a good location in southwest Iowa.  
W. A. Jenkins, 144 Simmons St., Galesburg, Ills.

WANTED—Second-hand Buckeye double-walled hives made by A. I. Root Co., without combs or supers, also Cowan rapid reversible extractor that is in perfect condition.  
Chas. C. Mackay, 147 Asheland Ave., Asheville, N. C.

WANTED—To buy 300 two-pound packages of three-banded leather-colored Italian bees, and 300 select untested queens. Must guarantee safe delivery and deliver June 1, 1921. Give reference.  
N. E. Woodhouse, Merrill, Oregon.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings, or slumgum. Send for our terms and our new 1920 catalog. We will buy your share of the wax for cash or will work it into foundation for you.  
Dadant & Sons, Hamilton, Illinois.

## BEEES AND QUEENS

Finest Italian queens. Send for booklet and price list.  
Jay Smith, R. D. No. 3, Vincennes, Ind.

Hardy Italian queens. \$1.00 each.  
W. G. Lauer, Middletown, Pa.

GOLDEN Italian queens, untested, \$1.50 each; dozen, \$14.00.  
E. A. Simmons, Greenville, Ala.

PACKAGE BEES and PURE ITALIAN QUEENS. Booking orders now for spring delivery. Circular free.  
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

I offer my 65 colonies bees, all in safe winter quarters, 70 miles from Sioux City. Promising field, sweet clover abundant. If paid for now I would turn a pleasant business situation to buyer. Urgent reasons for selling. Write quick.  
I. W. Cameron, Davis, S. D.

FOR SALE—25 stands of bees, price \$200.00. Homemade hives. No disease. Address  
A. P. Applegate, Pineland, Fla.

ORDERS booked now for 1921 shipments of bees and queens. Send for descriptive circular and price list.  
R. V. Stearns, Brady, Texas.

FOR SALE—A. I. Root Co. strain of leather-colored Italians. Virgins only, May to October, 1, 75c; 10, \$7.00; 100, \$65.00.  
P. W. Stowell, Otsego, Mich.

BEEES BY THE POUND—Also QUEENS. Booking orders now. FREE circulars give details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

FOR SALE—3 pounds of bees, a frame of brood and honey, and an untested Italian queen for \$7.00. 25 per cent down books your order for spring delivery.  
Emile J. Beridon, Jr., Mansura, La.

FOR SALE—12 colonies Italian bees in 10-frame Root hives together with over \$200 worth of supplies. \$200 takes the lot. Write me if interested.  
R. W. Gronemeier, Mt. Vernon, Ind.

ITALIAN QUEENS OF WINDERMERE are superior three-banded stock. Untested, \$1.50 each; six for \$8.00; tested, \$2.50 each; select tested, \$3.00. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

I am ready now to book your orders for bees in 2 and 3-pound packages for next May and June delivery, also 3-banded Italian queens and nuclei. Write for price list.  
C. H. Cobb, Belleville, Ark.

FOR SALE—150 colonies in two-story eight-frame hives, best combs, \$15.00 per colony, good condition, April 1. Same equipment half catalog price. This will not appear again.  
Daniel Danielsens, Brush, Colo.

FOR SALE—Vigorous leather-colored Italian queens, famous three-banded stock. Bees in two and three-pound packages. Write for information and prices for 1921. Shipments begin about May 1.  
C. M. Elfer, St. Rose, La.

FOR SALE—Root's strain of golden and leather-colored Italian queens, bees by the pound and nuclei. Untested, \$1.50 each; select untested, \$2.00; tested, \$2.50 each; select tested, \$3.00. For larger lots write. Circular free.  
A. J. Pinard, 440 N. 6th St., San Jose, Calif.

WE believe we have the best Italian queens obtainable. Our new system is working wonders. Book your order now for 1921. Untested, \$1.50; tested, \$3.00.  
F. M. Russell, Roxbury, Ohio.

DAY-OLD QUEENS—Superior improved Italians. Mailed in safety-introducing cages. Safe arrival and satisfaction guaranteed anywhere in the U. S. and Canada. Send for circular. Order in advance. Prices, April to October: 1. 75c; 12, \$7.20; 100, \$60.  
James McKee, Riverside, Calif.

1921 price of bees and queens from the A. I. Root Co. leather-colored stock. 1 lb. bees with queen, \$5.00; 2 lbs. \$7.50. Untested queens, \$1.50 each; dozen, \$15.00. Safe arrival. Orders booked now.  
Greenville Bee Co., Greenville, Ala.

FOR SALE—Nuclei of Italian bees and Italian queens. Two-frame nucleus with queen, \$7.00; 3-frame nucleus with queen, \$8.50; one untested queen, \$1.50; tested queen, \$2.50. Terms, one-half down.

Frank Bornhoffer, Mt. Washington, Ohio.

FOR SALE—Pure Italian queens, Golden or leather-colored, packages and nuclei; 1 untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100; virgins, 50c each; packages 24 and under, \$2.25 per pound; 25 and over, \$2.00 per pound; nuclei, 1-frame, \$4.00; 2-frame, \$6.00; 3-frame, \$7.50; queens extra. One-story 10-frame colony with queens, \$12.00. Golden Star Apiaries, R. 3, Box 166, Chicago, Calif.



We are now booking orders for early spring delivery of two and three frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.

Sarasota Bee Co., Sarasota, Fla.

I am now booking orders for three-banded Italian queens and nuclei for spring delivery. Untested queens. April 1 to May 1, \$1.25 each. May 1 to July 1, \$1.00. Discount on large orders. Nuclei, one three-frame, \$4.50; 50 or more, \$4.00 each.

L. R. Dockery, Carrizo Springs, Texas.

FOR SALE—Three-band leather-colored Italian bees and queens, two-pound packages only. Shipping season from April 15 to May 20. Safe arrival and satisfaction guaranteed. No disease. Order early if you wish prompt delivery. Write for price list.

J. M. Cutts, Montgomery, R. D. No. 1, Ala.

FOR SPRING DELIVERY—One good Italian queen, 1 Hoffman standard frame emerging brood, 1 pound live bees, price complete, \$6.50, f. o. b. Bordeloville. Queen introduced, mated, laying en route; loss in transit replaced if noted on express tag by agent; no disease in State. References given. Orders booked, May delivery, one-fifth cash; orders filled in rotation. Jess Dalton, Bordeloville, La.

WE are now booking orders for 3-lb. packages for May delivery. 3-lb. package with untested queen, \$7.00; 3-lb. package with tested queen, \$8.00. Orders booked as received. Safe delivery, satisfaction, and no disease guaranteed. All bees shipped on a comb of brood and honey, 50 per cent down will book your order. J. L. St. Romain, White Clover Farm & Apiary, Hamburg, La.

FOR SALE—1921 prices on nuclei and queens. 1-frame nucleus, \$3.00; 2-frame nucleus, \$5.00; 3-frame nucleus, \$6.50, without queens, f. o. b. Macon, Miss. 5 per cent discount in lots of 25 or more. Untested queen, \$1.25 each; \$15.00 per doz.; tested, \$2.00 each; \$22.00 per doz. No disease. Inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S. Queens sold only with nuclei.

Geo. A. Hummer & Sons, Prairie Point, Miss.

## HELP WANTED

WANTED—An up-to-date beeman for 1921.

R. S. Beckett, Rifle, Colo.

WANTED—A young man to work in my apiaries for season. Will furnish board. State wages wanted in first letter.

J. W. Sherman, Valdosta, Ga.

WANTED—Queen-breeder who understands the business in queen-rearing for the season of 1921.

M. S. Nordan, Mathews, Ala.

WANTED—Young man to learn queen and package business, will pay small wages and furnish board. Will increase wages as party learns business. To begin March 1.

J. M. Cutts, Montgomery, R. D. No. 1, Ala.

WANTED—Married man to work with bees and poultry, house and garden furnished. State experience had, age, weight, and height. Also wages expected. Reference required. Also one single man wanted.

E. L. Lane, Trumansburg, N. Y.

HELP WANTED—Will give experience and fair wages to active young man not afraid of work, for help in large, well-equipped set of apiaries for season, starting in April. State present occupation, weight, height, age, and beekeeping experience, if any. Morley Pettit, The Pettit Apiaries, Georgetown, Ont.

WANTED—Two helpers, one with experience, begin in March, for 700 colonies of bees. Give age, experience, wages wanted, recommendations, etc. Can sell an apiary so you can work it out. May lease all on shares after August.

Box No. 2, R. D. 1, El Centro, Calif.

WANTED for the season of 1921 an experienced queen-breeder. State experience had, reference, age, height, weight.

W. J. Forehand & Sons, Ft. Deposit, Ala.

## SITUATIONS WANTED

YOUNG man, some experience, wants work on bee farm. Write E. Ehr Gott, R. D. 5, West Allis, Wis.

SITUATION wanted by experienced beeman. Shares or salary. Good references. State conditions in first letter. Nelson B. Armstrong, Groton, N. Y.

WANTED—Position with bees or poultry, or combined. 20 years' experience. Would rent same on shares. Would go 50-50 with good reliable parties wishing to engage in bees and poultry enough to keep both occupied. Will give satisfactory references. Warren Fanning, 366 Norton St., Elmira, N. Y.

## Books and Bulletins

### CO-OPERATIVE MARKETING.

Farmers' Bulletin 1144, United States Department of Agriculture, "Co-operative Marketing," should be of special interest to those beekeepers who are interested in marketing honey co-operatively. This bulletin tells under what conditions co-operative marketing may be expected to be successful, and under what condition it should not be attempted. The forms of organization, the selection, and the qualifications of the management are discussed, and suggestions are given for organizing co-operative associations. This bulletin can be secured free by writing the Department of Agriculture, Washington, D. C.

### ALSIKE CLOVER.

Farmers' Bulletin 1151, on Alsike Clover, recently issued by the United States Department of Agriculture, is filled with valuable information in regard to this excellent honey plant. It contains a map of the United States showing where alsike clover is regularly used as a forage or seed crop. The author states that in many of the northern States this clover is sown on probably 75 per cent of the clover and timothy acreage. The mixing of alsike and red clover is recommended wherever it is difficult to get a stand of red clover, thus insuring a stand on spots where red clover does not catch. It is pointed out that a mixture of alsike clover with timothy or red clover when grown for hay gives a greater yield than when either is grown alone, besides improving the quality of the hay. A wide distribution of this bulletin among farmers throughout the alsike-clover territory should be a great boon to beekeepers in this region. This bulletin may be had for the asking by writing to the United States Department of Agriculture, Washington, D. C.

## SPECIAL SALE OF PRIVATE TUMBLERS



6½ Oz. Private Tumbler.

We have a surplus stock of private tumblers, holding 6½ ounces, put up two dozen in a case, including tin tops, at our Philadelphia branch. The cost of these tumblers has more than doubled in the past three years. We offer for a short time the surplus stock, available at 80c per case, \$7.50 for 10 cases, \$70.00 for 100 cases. Prices F. O. B. Philadelphia.

Send your order direct to

THE A. I. ROOT CO.,  
Medina, Ohio.

Announcement to

## Texas and the Great Southwest Beekeepers

The A. I. Root Co.  
of Texas

has completed a year's preparation for

**FULL ROOT SERVICE**  
from San Antonio, Texas.

The only reason that justifies the existence of any commercial concern is the good work it performs in public service.

The success of The A. I. Root Company is the result of service rendered.

**QUALITY** that stands the test.  
**PRICES** always consistent with costs.

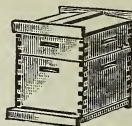
Large and complete stocks in  
**SAN ANTONIO**

A railroad center. Central to the honey belt of Texas. Almost over-night service to the Texas beekeepers.

The A. I. Root Co. of Texas  
Box 765, San Antonio, Texas.



## LISTEN BEEKEEPERS



We wish to tell the readers of Gleanings that the Bank of Perris has taken over about 500 hives of bees which we wish to sell as follows:

**Nuclei Will Be Our Specialty.**

One frame with queens, \$3.00; 2 frames and queen, \$5.00; one pound with queen, \$2.50; 2 pounds and queen, \$4.00; 8-frame Single-story colonies, \$10.00, F. O. B. Perris.

Young laying queens, \$1.50 each; \$8.00 for 6; \$15.00 per dozen; 50 to 100 or more, \$1.00 each.

We have a man in charge with long experience in bee-shipping. Let us book your orders with 10 per cent with same, balance when bees are wanted. Ask for special prices on large order. Shipping season begins May 10th. Safe arrival and satisfaction.

Address

**BANK OF PERRIS**  
PERRIS, CALIF.

## Grand Central Headquarters for the Newest Creations and Special Selections in Seeds THE BEST OR NONE

The earliest, sweetest, and best-flavored tomato in the world—the "Burbank."

A wonderful new sunflower—"Prolific White."

New field, pop, sweet, and "Rainbow Corn.

New Sweet Cucumbers.

New Hybrid Artichokes.

"Quality" Asparagus.

New, earliest, white, first-prize wheat, 15 per cent gluten.

New and specially selected flowers, also rare new Gladiolus, Cannas, etc., etc.

All are grown on my California farms under my own personal supervision. These seeds are not the common kind.

List your name now for January catalog.

**Luther Burbank - Santa Rosa, California**



## Quality Bee Supplies From a Reliable House

¶ Without fear or favor I place my BEE WARE and SERVICE before you.  
¶ It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S goods. Quality is first—save time when you put your goods together by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

¶ I am ready to meet your urgent needs. Send for my latest price-list.

¶ Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames, and eight-frame D. T. supers for 4 x 5 sections. At cost price, write for quotations.

**Charles Mondeng**

146 Newton Ave. N. &  
159 Cedar Lake Road.

MINNEAPOLIS, MINNESOTA.

## They Always Come Back For More

All beekeepers who once buy my comb foundation are sure to come back for more, because they find the quality all that can be desired and the price lower than they must pay elsewhere.

Not only do they re-order time after time, but they pass the good news around among their neighboring beekeepers. Here is one way it is done:

"In filling the position of Pennsylvania State Apiary Adviser, or, as commonly termed, 'bee inspector,' I have recommended your make of foundation a great many times. In our apiaries we have used hundreds of pounds of your make of foundation, as well as all other prominent makes, and in quality yours is the equal of the best. In exactness of cut, and dimensions, yours surpasses them all."—O. L. Rothwell, Gillett, Pa., Nov. 11, 1920.

Your own wax worked into foundation at lowest rates. Send for price list.

**E. S. Robinson**

Mayville, Chau. Co., N. Y.

## WESTERN BEEKEEPERS

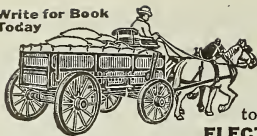
We're glad to know that the pressure their increasing patronage demanded resulted in the establishment of a Branch of the Root Company at Council Bluffs, Iowa, the focal point of western shipping activities.

The first season's business here has more than justified the contention of the Root Company, that western honey producers must have a factory and a center of their own. The Council Bluffs Branch wishes to thank publicly the many beekeepers for their expressions of interest in us, and their hearty welcome; and to state, also, that it is the determination of this company to keep everlastingly at this business of maintaining the high quality of the Root goods, and of improving—always improving—the promptness and thoroughness of our service. We are here to save you money, and to serve you. Use us.

**THE A. I. ROOT COMPANY OF IOWA**

Council Bluffs, Iowa

Write for Book  
Today



## FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.  
**ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.**



## INDIANOLA APIARY

will furnish 3-banded Italian bees and queens: Untested queens, \$1.00 each; tested, \$1.50 each. One pound bees, no queen, \$2.00. No disease.

**J.W. SHERMAN, VALDOSTA, GA.**

## NEW ENGLAND

BEEKEEPERS will find a complete stock of up-to-date supplies here. Remember we are in the shipping center of New England. If you do not have a 1920 catalog send for one at once.

**H. H. Jepson, 182 Friend St., Boston, Mass.**



### "Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog.

**THE BEST LIGHT CO.**  
306 E. 5th St., Canton, O.

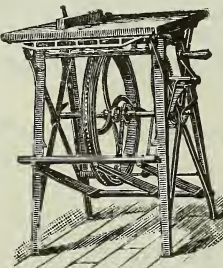
## BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

### Machines on Trial

Send for illustrated catalog and prices.

**W. F. & JOHN BARNES CO**  
545 Ruby Street  
ROCKFORD, ILLINOIS

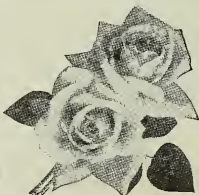


## ROSES of New Castle

Are the hardiest, fresh blooming rose plants in America. Grown on their own roots in the fertile soil of New Castle. We give you the benefit of a life time experience and the most select list in America. Every desirable Rose now cultivated in America is included in our immense stock and the prices are right.

Our rose book for 1921 ROSES OF NEW CASTLE tells you how to make rose growing a success. Published and elaborately printed in actual colors. Send for your copy today—a postal will do.

**HELLER BROS. CO., Box 118, New Castle, Ind.**



## SPECIAL SALE OF HONEY JARS



We have a surplus stock of taper jars, holding 9 ounces, put up two dozen in a case, including lacquered tin tops, at our Philadelphia branch. The cost of these jars has more than doubled in the past three years. We offer for a short time the surplus stock available at 85 cents per case, \$8.00 for 10 cases, \$75.00 for 100 cases. Prices f. o. b. Philadelphia. Send your order direct to

**THE A. I. ROOT COMPANY**  
Medina, Ohio

9-oz. Taper Jar

## Thrifty, Sturdy Trees

You can be sure when you buy Woodlawn grown fruit trees, vines and berry bushes that they are thrifty, vigorous growers and heavy bearers. Our 45 years of successful growing experience has been directed towards producing a wide variety of that kind of stock. We have the exclusive sale of the new Ohio Beauty Apple.



New Ohio Beauty Apple

Our extensive line of ornamental shrubs, bushes, and perennials are of the same dependable quality as our trees.

We sell seeds for the vegetable and flower garden. Illustrated 1921 Nursery List contains valuable planting and growing information. Mailed on request.

**WOODLAWN NURSERIES**  
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## GRASS SEED FREE SAMPLES

Wonderful Value Wholesale Prices Highest Quality  
Don't fail to investigate these bargains. Recleaned Tested Timothy **\$3.95** bu. Sweet Clover unhulled, **\$4.50** bu. Alsike Clover & Timothy **\$5.85** bu. Sudan Grass **81-2c** lb. Prices cover some grades of limited quantities. Clover and other Grass & Field Seeds at low prices. All sold subject to State or Government Test under an absolute money-back guarantee. We specialize in grass and field seeds. Located to save you money and give quick service. We expect higher prices. Buy now and save big money. Send today for our money-saving Seed Guide, explains all—free.

**American Mutual Seed Co. Dept. 651 Chicago, Ill**

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IT'S FREE A WORTH WHILE BOOK WRITE TODAY

For vegetable growers and all lovers of flowers. Lists the old stand-bys; tells of many new varieties. Valuable instructions on planting and care. Get the benefit of the experience of the oldest catalog seed house and largest growers of Asters in America. For 72 years the leading authority on vegetable, flower and farm seeds, plants, bulbs, and fruits, 12 greenhouses, 500 acres.

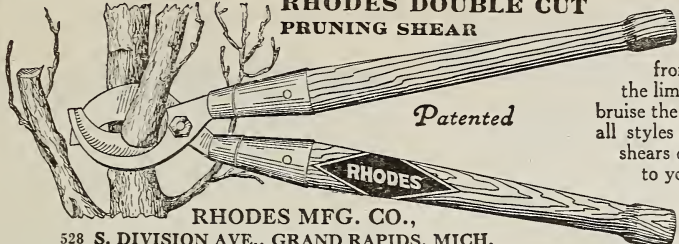
**Vick Quality Seeds: Grow the Best Crops the Earth Produces**

This book, the best we have issued, is absolutely free. Send for your copy today before you forget. A postcard is sufficient.

**JAMES VICK'S SONS, 33 Stone St. Rochester, N. Y. The Lower City**







**RHODES DOUBLE CUT PRUNING SHEAR**

Patented

**RHODES**

**RHODES MFG. CO.,**  
528 S. DIVISION AVE., GRAND RAPIDS, MICH.

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.



## EVERGREENS Hill's Hardy Tested Varieties

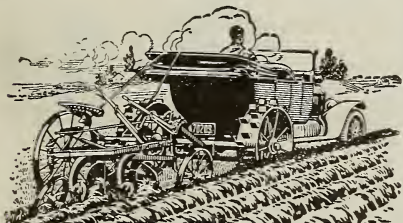
Fine for windbreaks, hedges and lawn planting. All hardy, vigorous and wellrooted. We ship everywhere. Write for free Evergreen book. Beautiful Evergreen Trees at moderate prices. D. Hill Nursery Co., Box 246, Dundee, Ill.

## Best and Newest Fruits



Headquarters for Neverfail, Dunlap, Premier, Oswego, Big Joe, Chesapeake, and 50 other varieties Strawberries; Erskine Park, Plum, Farmer, Idaho, Royal Purple, Columbian, Herbert, and other Raspberries; Snyder, Watt, and other Blackberries; Perfection, Wilder, and other Currants; Doolittle, and other Gooseberries; Grape Vines, Fruit Trees, Asparagus, Seed Potatoes, Roses, Shrubs, Eggs and Baby Chicks, Crates and Baskets, etc. Everything for the Home Grounds. Beautifully illustrated and instructive catalogue free.

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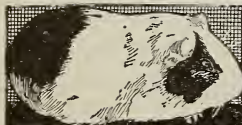


## Make a Tractor of Your Car

Use it for farm work. Pullford catalog shows how to make a practical tractor out of Ford and other cars.

Write for Catalog

**Pullford Co., Box 23 C Quincy, Ill.**



## Raise Guinea PIGS FOR US!

We need men and women, boys and girls everywhere to raise Guinea Pigs for us. We tell you where to get them, show you how and buy all you raise. Big opportunity for money making. Thousands needed weekly.

**Easy to Raise—Big Demand** No special knowledge, experience or equipment needed. They breed the year round—are very prolific—require but little space or attention. Pay better than poultry or squabs—cost less to house, feed, keep, easier raised—less trouble, market guaranteed.

**FREE CAVIES DISTRIBUTING COMPANY**  
3145 Grand Avenue, Kansas City, Mo.  
Largest Guinea Pig breeders and distributors in America.



## Queens

Write for our catalog of high-grade Italian Queens. Pure mating and safe arrival guaranteed.

Prices for 1921.

1 to 4 inclusive \$3.00 ea.  
5 to 9 inclusive 2.90 ea.  
10 or more... 2.80 ea.  
Breeders .... 12.00 ea.

## Jay Smith

Route Three  
Vincennes, Indiana.

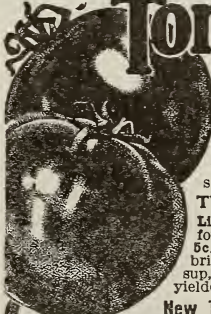
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Quick as lightning. Hard as stone. One of the earliest in existence. To introduce our Northern Grown "Sure Crop" Live Seeds we will mail you 200 seeds of Condon's New Prosperity Cabbage and our Big 1921 GARDEN and FARM GUIDE . . . . .



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Send Postal Today for your free copy and Trial Package  
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## LIVINGSTON'S FAMOUS Tomatoes



Give satisfaction. Stand for highest yield and quality. We originated sorts for all purposes and all tomato growing sections. We grow more tomato seed than any seedsmen in the world.

### TWO BEST VARIETIES

Livingston's Globe, finest pink, for slicing and shipping, pkt. 5c. Livingston's Stone, finest bright red, for canning and eating, pkt. 5c. Both immense yielders. Try them.

### New 112-Page Catalog FREE

One of the finest seed catalogs published. Gives truthful descriptions and helpful cultural directions of the most reliable sorts of vegetable, flower and field seeds. Tells when to plant and how to grow big crops. Write for Free copy.

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A high-class illustrated monthly journal devoted to the Growing and Marketing of Ginseng, Golden Seal, Senega Root, Belladonna, and other unusual crops. \$1.00 per year. Sample copy 10c. Address  
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Three-band Italians and Goldens, pure mating and safe arrival guaranteed. We ship only queens that are top-notchers in size, prolificness, and color. Untested, \$2.00 each; six for \$11.00; twenty-five for \$45.00. Tested queens, \$3.00 each, six for \$16.00.

BUCKEYE BEE CO., Box 443, Massillon, Ohio.

## MASON BEE SUPPLY COMPANY

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Prompt and Efficient Service

BECAUSE—Only Root's Goods are sold. It is a business with us—not a side line. Eight mails daily. Two lines of railway.  
If you have not received 1920 catalog send name at once.

### ROOT'S BEE SUPPLIES.

I can make immediate shipment for early orders, and you can get the discount by ordering early.

A. M. MOORE, Zanesville, Ohio.

22½ South 3rd St.

### BEEKEEPERS

No doubt you want to save money on your bee supplies for next spring. Now is a good time to do it. Take advantage of our December discount and write today for prices and catalog. Our prices will save you money. All material and workmanship guaranteed. Texas beekeepers should address A. M. Hunt of Goldthwaite, Texas. He sells the best.

Leahy Mfg. Co.,  
Higginsville, Mo.



## World's Best Roofing at Factory Prices

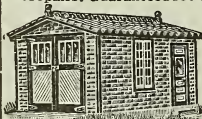
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Practice in Patent Office and Court  
Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building,  
WASHINGTON, D. C.

## SWEET CLOVER 4<sup>50</sup>/<sub>BU.</sub>

Unhulled White Blossom Sweet Clover. For winter or early spring sowing. Builds up land rapidly and produces heavy Money Making Crops while doing it. Excellent for pasture and hay. Easy to start. Grows on all soils. Have Hulled Scarified Seed at Low Prices. Sold on a Money Back Guarantee. Write today for Big Seed Guide. Free. American Mutual Seed Co. Dept. 951 Chicago, Ill.

## GRASS SEEDS



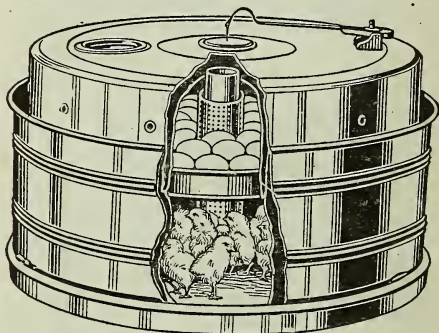
### CLOVERS, TIMOTHY

Bell Brand Grass Seeds are the purest, best quality that can be purchased. Specially adapted to your climatic and soil conditions—hardiness bred into them. The development of 42 years' successful seed culture.

### FREE Samples and Catalog

Write for Isbell's 1921 Annual—ask for samples of any field seeds you want. Isbell's "direct from grower" prices assure you of big savings on sterling quality seeds — "seeds that grow as their fame grows."

S. M. ISBELL & COMPANY (6)  
485 Mechanic St. Jackson, Michigan



## It's Easy to Raise Poultry With Cycle Brooder-Hatchers.

A NEW idea, combining both Brooder and Hatcher in one machine, one lamp serving both purposes. A real "Metal Mother" that will hatch every hatchable egg, and the chicks will be strong, lively, and easy to raise in the brooder compartment.

YOU can use the Cycle either as a Brooder or Hatcher, or both at once. The Cycle is all metal; you can operate it safely in the house or in any out-building. You can see the eggs at all times through the round glass window without lifting the top. And you can turn them instantly with a single movement. The regulator control is very sensitive. A gallon of kerosene will usually carry through an entire hatching.

Just the thing for busy farmers and city enthusiasts. 50-egg and 50-chick size \$11.00. Two for \$20.00.

THE CYCLE HATCHER: Exactly the same as the Brooder-Hatcher, but without the brooding compartment. 50-egg size \$9.00. Two for \$17.00.

WEIGHT: 18 lbs. for parcel post shipment. Postage extra.

CATALOGUE of Hatchers, Brooders, Poultry and Supplies sent free. Send a postal today.

### CYCLE HATCHER COMPANY

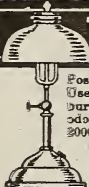
239 Philo Bldg., Elmira, N. Y.



**ORDERS NOW BOOKED**

for 1921 shipments of bees and queens. Send for descriptive circular and price list.

R. V. STEARNS,  
Brady, Texas.



**The "BEST" LIGHT**

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Costs no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. **AGENTS WANTED EVERYWHERE.**

**THE BEST LIGHT CO.**  
306 E. 5th St., Canton, O.

# BEEKEEPERS!

Place your order for Supplies NOW and take advantage of the Early Order Cash Discount, 5 per cent for December, 4 per cent for January. Our stock of Standard Hives, Supers, Hive Bodies, Brood Frames, Foundation, and all other Standard Goods is complete. "If you want the Cheapest, buy the Best."

Our Aim is to give Prompt Service, Highest Quality, and Guaranteed Satisfaction to our customers. Send us a trial order; we feel confident you will be satisfied.

Our annual catalog will be ready for mailing, January, 1921. It's free for the asking.

**AUGUST LOTZ COMPANY, BOYD, WIS.**

## Queens and Bees When You Want Them

We are establishing one of the most modern Queen-rearing outfits in the United States, and will breed from New Imported Italian Blood. We are not going to tell you how many Queens we will put on the market, as we shall produce **QUALITY** instead of **QUANTITY**.

A limited number of orders for spring delivery will be accepted at the following prices:

| Quantity.             | 1      | 6       | 12      | 24      |
|-----------------------|--------|---------|---------|---------|
| Untested .....        | \$2.00 | \$11.40 | \$21.60 | \$40.80 |
| Select Untested ..... | 2.25   | 12.80   | 24.30   | 45.90   |

We are also prepared to furnish full colonies, nuclei, and pound packages for spring delivery. Write today for prices.

**THE A. I. ROOT COMPANY OF TEXAS**

P. O. BOX 765, SAN ANTONIO, TEXAS.

## FOREHAND'S QUEENS---THEY SATISFY, WHY?

Because of 28 years of experimental work, with both queen-breeding and honey-production. With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none **BETTER**. Why experiment? Take advantage of the life experience of my breeders. **OUR SERVICE STATION**.—We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-banded Italians only. Nov. 1st to June 1st.

|                         | 1      | 6      | 12      |
|-------------------------|--------|--------|---------|
| Untested .....          | \$2.00 | \$9.00 | \$16.00 |
| Selected Untested ..... | 2.25   | 10.50  | 18.00   |
| Tested .....            | 3.00   | 16.50  | 30.00   |
| Selected Tested .....   | 3.50   | 19.50  | 36.00   |

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival, and perfect satisfaction guaranteed. Write for circular and large-order discounts. Foreign orders at receiver's risk.

**N. FOREHAND**

**RAMER, ALABAMA**

## Sell Your Crop of Honey to

Hoffman & Hauck, Inc.  
Woodhaven, N. Y.

No Lot too large or small, and Purchase  
your

Containers, Prompt Shipment

2 ½ lb. Pails, case 2 doz..... \$1.90 each  
Crates of 100 \$ 7.25

5-lb. Pails, case 1 doz..... \$1.80 each  
Crates of 100 \$11.00

10-lb. Pails, case ½ doz..... \$1.60 each  
Crates of 100 \$17.50

5-gal. cans used 2 to case.....60c case

WHITE FLINT GLASS JARS, SCREW CAPS

Qt. Honey 3-lb. size 1 doz. cartons \$1.25 each

1-lb. " 2 doz. " 1.70 each

½-lb. " 3 doz. " 2.00 each



## READY to mail to you

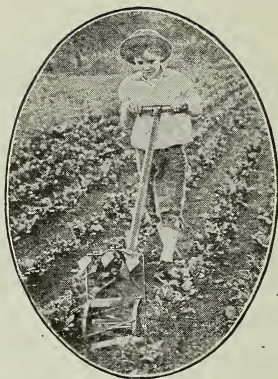
In this catalog we describe accurately the sturdy - growing varieties that have helped us build one of the largest seed and nursery businesses in the world. For 67 years we have listed only the strains that we were sure deserved our support. S & H seeds and nursery stock will surely please you, however critical you are.

Write—TONIGHT—for your copy of this interesting, well-illustrated catalog.



**THE STORRS & HARRISON CO.**

Nurserymen and Seedsmen  
Box 14 Painesville, Ohio



## Completely Destroys the Weed Growth

More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch—all in the same operation.

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

## BARKER WEEDER, MULCHER AND CULTIVATOR

Eight reel blades revolve against a stationary underground knife — like a lawn mower. "Best Weed Killer Ever Used." Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels for deeper cultivation—3 garden tools in 1.

### FREE ILLUSTRATED BOOK.

Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

## BARKER MANUFACTURING COMPANY

Dept. 23.

David City, Neb.

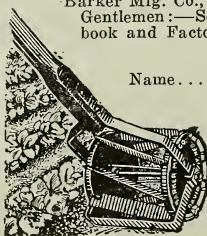
Barker Mfg. Co., Dept. 23, David City, Neb.  
Gentlemen:—Send me postpaid your free book and Factory-to-User offer.

Name.....

Town.....

State.....

R. F. D. or Box.....





# Beeswax Wanted

In big and small shipments, to keep Buck's Weed-process foundation factory going. We have greatly increased the capacity of our plant. We are paying higher prices than ever for wax. We work wax for cash or on shares.

## Root Bee Supplies

Big stock, wholesale and retail. Big catalog free.

## Carl F. Buck

The Comb-foundation Specialist

August, Kansas

Established 1899.

# BEE SUPPLIES



We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very best bee supplies that money can buy. Only the choicest material suitable for beehives is used. Our workmanship is the very best. Get our prices and save money.

**EGGERS BEE SUPPLY  
MFG. COMPANY, INC.**

Eau Claire, Wis.

# Sow Seeds of Success In Your Garden

## Write Today for Isbell's 1921 Catalog

Some vegetable gardens pay their owners \$100 in returns for every \$5.00 spent. They are a constant source of big profit. They give pleasure to everybody in the home—old and young alike. They yield the finest vegetables and yield lots of them, because they are planted with—



For FIELD

TRADE MARK

For GARDEN

**Isbell's Gardens Pay**—for the same reason that pure-bred cattle produce thoroughbred off-spring. Every ounce of Isbell Seed is tested. Isbell Seeds are produced in the North where earliness, hardiness and sterling qualities are bred into them. Isbell's 1921 book on seeds and gardening tells what and how to plant and what to expect from the crop. It's one of the most authoritative catalogs in America. Ask for your copy. Mail coupon.

**S. M. ISBELL & CO.**

484 Mechanic St., Jackson, Mich.



## Free Catalog Coupon

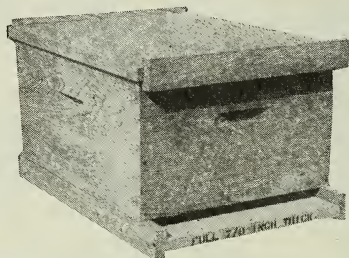
S. M. Isbell & Co., 484 Mechanic St., Jackson, Mich.

Gentlemen:—  
Without obligation, send me your 1921 Catalog of Isbell's Seeds

Name \_\_\_\_\_

Address \_\_\_\_\_

Made right.



Priced under favorable manufacturing conditions.

# Cypress Bee Supplies

On account of being in the cypress belt and having extremely low operating expenses we are able to offer you the supplies made of the finest soft cypress obtainable, which is almost as soft and light as white pine.

Hives are standard dimensions, dovetailed, hand holds on all four sides, supplied with rabbets, nails, and Hoffman frames. Prices include cover, bottom, body, and frames.

A full line of Root's supplies and Airco Foundation kept in stock. Let us quote you on your 1921 requirements in either Root's or our goods.

8-frame 1-story hives complete in lots of 5.....\$14.75

10-frame 1-story hives complete in lots of 5..... 16.00

Above supplied with Root-Hoffman frames at \$1.50 extra for 5 8-frame, and \$1.85 for 5 10-frame.

## Hive Bodies.

Eight-frame .....\$0.95 each

Ten-frame ..... 1.05 each

Bottom-boards are made of  $\frac{7}{8}$ -inch lumber throughout. Floor is tongued and grooved together, reversible, of standard dimensions and construction. Price:

8-frame in lots of 5.....\$0.75

10-frame in lots of 5..... .80

## Prices of Bees.

Untested queens: 1, \$2.00; 12 or more, 1.50 each. Tested queens, \$3.00.

1-lb. package without queen.....\$4.00

2-lb. package without queen..... 6.75

2-frame nuclei ..... 7.00

8-frame colony ..... 20.00

10-frame colony ..... 22.00

1 carload bees in 8-frame cypress hives for shipment in spring from Helena, Ga., at \$12.50 each.

## Covers.

All covers are flat and reversible. Both one and two piece are the same in every respect, except the one-piece is made from wide clear boards and the two-piece is joined with metal. Cypress covers do not warp.

8-frame two-piece .....\$0.70

10-frame two-piece ..... .75

8-frame one-piece ..... .85

10-frame one-piece ..... 1.00

Absolutely the best cover made.

Fresh stock foundation shipped from factory direct to you at wholesale prices in lots of 50 pounds or more.

SEND FOR CATALOGUE.

# The Stover Apiaries

Helena, Ga.

Mayhew, Miss.



For Your Winter Trade

# HONEY

WHOLESALE PRICES

## 16 Cents Per Pound

Extracted Honey  
Sixty-Pound Cans

F. O. B. Boulder, Colorado.

NOTE: This honey will be granulated, finest quality,  
white alfalfa-sweet clover honey, this year's production.

---

### Comb Honey

Crates of 8 cases, 24 sections.

|                  |        |
|------------------|--------|
| Fancy .....      | \$7.25 |
| Number One ..... | 7.00   |
| Number Two ..... | 6.50   |

F. O. B. Boulder, Colorado.

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The Foster Honey & Merc.  
Company  
Boulder, Colorado.

We are starting in a new year, the year of 1921, and we want to make this the finest of all years, in all respects. What are you planning to do in regard to your bees?

In the FIRST place, you must have supplies. Are you going to order now and have them on hand when needed, or are you going to wait until the bees are flying?

# Happy New Year



**F. A. SALISBURY**  
1631 West Genesee Street  
Syracuse, New York



Send for our price list. Write us for quotations.

In the SECOND place, you want "Service." Now is the time to secure the right kind of service, promptness, and accuracy. When orders are piling up in the rush season we cannot give you our best attention.

In the THIRD place, order now while you are sure of getting your goods on time. Later on, freight will undoubtedly be tied up, and shipments slow in reaching destination.



## Place Your "falcon" Order Early

**DELIVERIES** will be more certain: everything will be on hand ready for spring. Special discount to early buyers.

Include an Ideal Bee-Veil in this season's supplies. Made of light weight indestructible wire and strong cloth. Will not blow in your eyes or stick to your face. Price \$1.60.

"Falcon" bees and bee supplies are guaranteed to give absolute satisfaction. Send for our red catalog.

**W. T. Falconer Manufacturing Co.**

**Falconer (near Jamestown), N. Y., U. S. A.**

"Where the best bee-hives come from."



\$1.60.

# THE AULT 1921 BEE SHIPPING CAGE

## Patent Pending

- 1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.
- 2nd. The feeder uses pure sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.
- 3rd. Feeders are made more substantial, 1-3 larger, and have screw cap that will not jar out.
- 4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.
- 5th. The Cage is one piece screen wire protected by thin boards on the outside.  
Send for free circular describing the cage in detail, prices, etc.

## Queens---Package Bees---Queens

**ORDERS ARE COMING DAILY FOR 1921 SHIPPING.**

4 per cent Cash Discount for Nov., 3 per cent for Dec., 2 per cent for Jan. on all orders. Or will book your order with 20 per cent down, balance just before shipping. My Free Circular gives prices in detail, etc. Safe delivery Guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

1-pound pkg. bees \$3.00 each, 25 or more \$2.85 each.

2-pound pkg. bees \$5.00 each, 25 or more \$4.75 each.

3-pound pkg. bees \$7.00 each, 25 or more \$6.65 each.

F. O. B. Shipping Point. Add price of queen wanted.

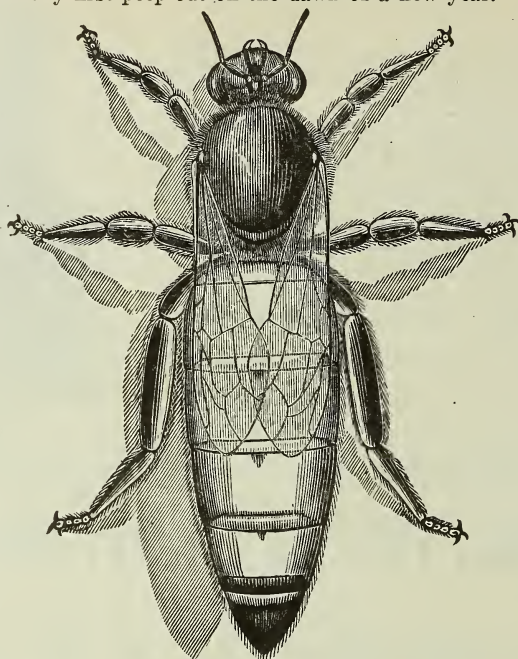
|  |  |
|--|--|
| 1 Untested Queen, \$2.00 each; 25 or more .....    | 1 Tested Queen, \$3.00 each; 25 or more .....  |
| 1 Select Unt. Queen, \$2.25 each; 25 or more ..... | 1 Select Tested, \$3.50 each; 25 or more ..... |
|  |  |

## NUECES COUNTY APIARIES

CALLEN, TEXAS

**E. B. AULT, Proprietor**

My first peep out on the dawn of a new year.



Highest Quality

Prompt Service

Satisfaction

## The Reliable Three- Banded Italian Queens

We are now booking orders for 1921. Queens will be ready after May 15th, one-fourth down, balance just before shipping date. Place your orders early, as we fill orders in rotation.

### WHY ORDER FARMER QUEENS?

They are bred by as skillful and experienced queen-breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our queen-rearing yards. We devote our time to rearing as good queens as possibly can be, and we positively guarantee that no better can be reared; we spare neither labor nor money in developing our strain of Italians. It is our intention to improve our original stock each year and to be more skillful queen-breeders. Our first original stock was procured from the highest quality obtainable, which we have proved to the highest point and is now not surpassed by any. Our own eyes inspect every queen that leaves our yards; no culls sent out. Place your orders, and after you have given our queens a fair test and you are not satisfied in every way that they are as good as any you have ever used, just return them and we will send you queens to take their places or return your money. They are very resistant to diseases, the very best for honey-gathering. You take no risk in buying our queens; safe arrival in U. S. A. and Canada; satisfaction is left entirely to purchaser; prompt service given to all orders; every queen guaranteed to be purely mated.

| Our Prices:           |        | 1       | 6       | 12       | 100 |
|-----------------------|--------|---------|---------|----------|-----|
| Untested .....        | \$1.50 | \$ 8.00 | \$15.00 | \$100.00 |     |
| Select Untested ..... | 1.75   | 9.50    | 17.00   | 120.00   |     |
| Tested .....          | 3.00   | 14.75   | 25.00   |          |     |
| Select Tested .....   | 4.00   | 23.00   | 42.00   |          |     |

Write for prices on larger quantities than 100.

**The Farmer Apiaries - - Ramer, Alabama**

Where the good queens come from.



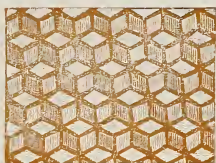
# Airco Foundation--Why?

We are now beginning to get the beekeepers' own verdict on Airco Foundation, the new Root-Weed process, announcement of which we made a year ago and more.

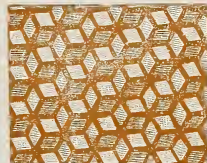
We then told the beekeepers that the new process had to do with both the refining of the wax and the milling of the wax sheets. We said that we believed that we had made one of the greatest of all improvements in the manufacture of comb foundation.



Thin Super.



Light Brood.



Medium Brood.

Today, with reports coming in from beekeepers who have now used this new foundation, we are sure that all the claims we have made for Airco are fully proved. Let's have some of the testimony:

## Bees Draw It Out Sooner.

"The bees accept it quickly; draw it out with less labor and sooner. I have used over 200 pounds of Airco the past season."

Marietta, N. Y.

J. G. Burtis.

## Simply Perfection.

"This foundation may be called the crown of all betterments in modern beekeeping. It is simply perfection. The fact is that we need nothing better, and I am convinced that it cannot be surpassed."

Sabanna, Brazil.

Victor Jungers.

## Far Superior to Any Others.

"Airco Foundation is far superior to any other foundation that I have ever tried. The bees accept it at once, and draw it out into fine worker comb."

Lake Geneva, Wis.

C. H. Gebhardt.

We have many such commendations for Airco Foundation. It is only praise that comes from the beekeepers, and so it is that we believe it to be the best comb foundation that has ever been made.

## Why It's Best

Airco Foundation is superior in these points: It is all made of high-grade wax, refined without the use of any acids or other injurious chemicals. By this new refining process, the wax retains its aroma, and the impurities are more perfectly eliminated than by any other process known. Most important of all, the new process of milling this superior wax gives a comb foundation nearer like nature's than any other made. The cell base is thinner and the walls deeper, for which reason the bees accept it sooner and draw it out more quickly than they do the old-process foundation.

We invite every beekeeper in America to make his own test of Airco Foundation this year. We shall be willing to abide entirely by the verdict to be rendered by users of this far superior new foundation.

Write for particulars and prices.

# The A. I. Root Company

Medina, Ohio

# A Happy "Beeware" Year

A Happy New Year to all beekeepers is our wish. You can make it happier—make it a "Beeware" year. Look over the list of improved appliances we offer. Each embodies the quality found only in our goods. Thousands look for this mark—"Beeware." Do you?

## Three New Branch Houses

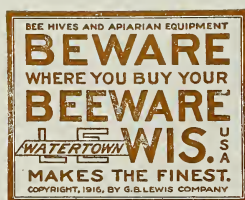
Eastern and Southern beekeepers will be pleased to know that their increasing patronage has necessitated the opening of three new "Beeware" branches to afford them the service to which they are entitled. Address the G. B. Lewis Company at:

328 Broadway, Albany, New York.  
Lawyers, (Near Lynchburg), Virginia.  
132 Webster Ave., Memphis, Tennessee.

## Some "Beeware" Surprises

A Lewis 4-way bee escape, faster and better; a new Lewis wiring device, takes any size frame; Woodman's Big Smoke Smoker, for the commercial honey producer; Muth's improved bee-veil, your shoulders won't push it off; Lewis capping melter, no overheated honey from cappings; 5-way wood-and-zinc excluder, wire brushed; honey tanks, heavier and electric welded; metal eyelet end-bars, no sagged brood combs; many other improvements found only in Lewis "Beeware."

LOOK  
FOR



THIS  
MARK

Only distributors of Lewis "Beeware" sell these. Your "Beeware" catalog gives your distributors' name. Let us send this surprise catalog; write us today.

## G. B. Lewis Company - Watertown, Wis.

Makers of Lewis "Beeware"—Nationally Distributed.